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WEATHER AND HARVEST CYCLES

In an article published in THE ECONOMIC JOURNAL for March 1920, and supplemented by a note in the June issue, I called attention to certain figures relating to British exports, to prices of food as compared with prices of other articles, and to barometric pressures, which appeared to suggest the existence of a regular meteorological cycle affecting harvests.[1]

The statistics given in those articles related to the last sixty or seventy years. I stated, however, that the suggestion made by them appeared to be supported by such records as I had up to then investigated relating to the prices of corn in earlier centuries. I have now collected more information as to corn prices, and submit this as a further step in the investigation of weather periodicities.[2]

This information is summed up in the chart printed below, and representing the yearly fluctuation of wheat prices in Western and Central Europe from 1500 to 1869. Considerations of space exclude any account of the sources used and the presentation of any but the final and summary figures. I can only say that they are based on lists of prices for long periods of consecutive years at nearly fifty separate places in England (4), Scotland (4),

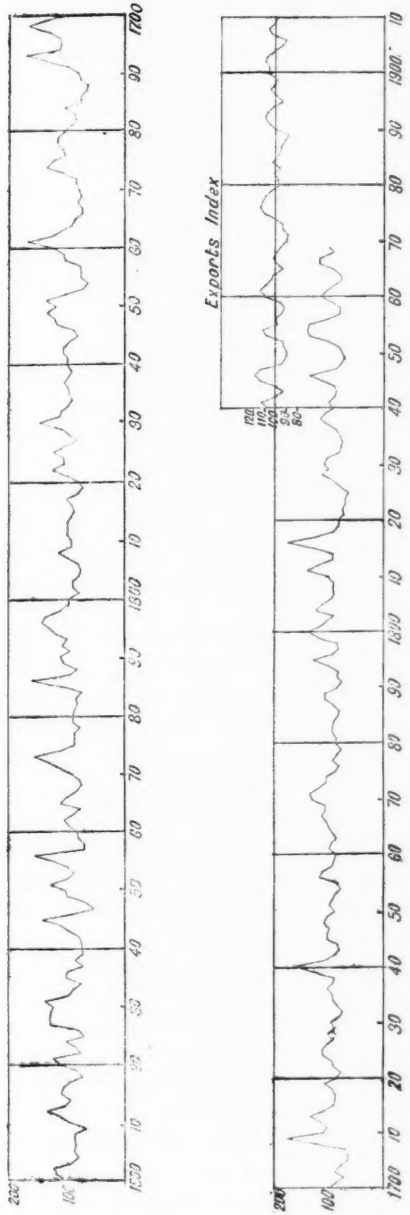
[1] In the issue of THE ECONOMIC JOURNAL for March 1921 Mr. W. Bryant has criticised those articles, and particularly my use of certain barometric statistics. I venture to think, however, that he has not quite appreciated my point in using them. A period of 15·3 years clearly cannot be demonstrated by statistics covering 40 years, *i. e.* only two complete revolutions of the period, and I never thought it could. What I did was to show in certain economic records five successive fluctuations of this length (15·3 years), and then that the three minima for which comparison could be made practically coincided with minima of barometric pressure in the greater part of the civilised world. Nor is it the case (as Mr. Bryant says) that I "curiously ignored" the South American statistics which would have corrected my results and evened out the fluctuation. In my first article I specifically referred to those statistics, and gave the obvious reason for not combining them with those for the Eastern Hemisphere.

[2] In collecting these statistics I have been helped by a grant from the Department of Scientific and Industrial Research.

Holland (2), Flanders (5), France (11), North Germany (14), South Germany (4), Alsace (2), Bohemia (1), and Austria (1), as well as on official averages for whole countries, when these become available. The bracketed figures show the number of separate places represented. The price lists have all been printed before in separate books, pamphlets or periodicals, but never collected even for a single country. I have used Thorold Rogers' work only to provide averages for England before 1593 and material for two or three lists; d'Avenel's figures for France I have not been able to use at all. For the present purpose the prices have been combined, by conversion into index numbers on the basis: Mean of 1700–45 = 100, and the general trend has been eliminated, as far as possible, by showing the index number for each year as a percentage of the mean for the period of 31 years of which it is the centre. These percentages are set out graphically on the chart as indices of the yearly fluctuation of wheat prices. The years are "crop years," that is to say, the index for any given year represents so far as is possible the average price at which the crop of that year was sold. In comparisons with other records the "crop year" is taken as beginnning on 1st September. Thus, 1897·33 in this notation corresponds to 1st January 1897, 1897·00 to 1st September 1896. All dates in this article refer to crop years unless the contrary is indicated.

The chart shows a curve with a number of well-marked peaks of comparable height, running to a maximum of 178, and many minor elevations. There can, I think, be no doubt that these peaks and elevations reflect substantially the harvest conditions of the year to which they relate. This is clear *a priori*, having regard to the very wide field from which the figures are drawn. A siege of a single town as of Paris in 1590 may cause a rapid rise and fall of prices there, but the fate of a single town does not seriously affect the general index number. A general war like the Thirty Years War, or that of the Napoleonic period, whether accompanied or not by an orgie of currency inflation, may raise rapidly or gradually the general level of prices, but after such a widespread destruction of goods and depreciation of money, prices cannot show a rapid and comparable fall. The only cause which can reasonably account for the characteristic peaks of the curve before us is a fluctuation in the yield of harvests. That this was, in fact, the cause can be shown *a posteriori* practically in all cases by historical records; the main peaks and the minor elevations alike are almost all

FLUCTUATION OF
WHEAT PRICES IN WESTERN AND CENTRAL EUROPE,
1500–1869,
WITH EXPORTS INDEX, 1840–1910.



identified with well-known years of famine or harvest failure, generally attributed to inclement weather.

This does not mean that the disturbing influence of wars, inflations, and the like has been or can be completely eliminated. Undoubtedly, for instance, the price of the year 1617, by its position just before the outbreak of the Thirty Years War, appears in the curve too low relatively to those of 1622 and 1608, but all three years were equally beyond doubt seasons of dearth. The index for 1651, again, is probably raised unduly by the destructive but short-lived Revolt of the Fronde; 1804 and 1805 are suspect, for they coincide with Napoleon's lightning strokes across Europe. In the last seventy years (after 1800) another disturbing influence—the credit cycle—begins to show itself, and cannot be eliminated by any simple method. The character of the curve is visibly altered in these later years; beyond 1869 it could not without correction be trusted as an indication of harvest conditions.

In the first fifty years the basis of the price index is rather narrow, no satisfactory figures being available from France before 1520, or from North Germany before 1550. The most valuable portion of the chart is accordingly that between 1550 and 1800.

Subject to one or two reserves, the chart must be accepted as essentially a reflection of harvest success and harvest failure. What light does it throw on the problem of weather periodicity?

The answer to this question is sought below by two distinct methods. The first is mathematical—a harmonic analysis of the sequence of numbers given in the Appendix Table as indices of fluctuation of wheat prices. The second is arithmetical—an examination of the intervals between peaks on the curve shown in the chart, with reference to known solar or meteorological cycles.

For the harmonic analysis I am indebted to Mr. H. T. Curwen, Lecturer in Mathematics at the London School of Economics and Political Science. In accordance with the methods used by Sir Arthur Schuster, Mr. Curwen has constructed a periodogram of wheat-price fluctuations; his work is not complete, but his first results are sufficiently striking to be given at once. They are set out in the table headed "Periodogram of Wheat Price Fluctuations," with a brief explanation of the formulas used.

The observations, *i. e.* the index numbers of price fluctuation (t) were arranged in m rows of p observations (so that $mp = N$,

the total number of observations), and were dealt with as follows :—

t_0, t_1	.	.	.	.	.	.	t_{p-1}
t_p, t_{p+1}	.	.	.	.	.	.	t_{2p-1}
$t_{(m-1)p}$	.	.	.	.	.	.	t_{mp-1}
Sum of Columns T_0, T_1	.	.	.	.	.	.	T_{p-1}

Then

$$a = \frac{2}{p} \sum_{c=0}^{p-1} \frac{T_c}{m} \cos \frac{2s\pi}{p} c$$

$$b = \frac{2}{p} \sum_{c=0}^{p-1} \frac{T_c}{m} \sin \frac{2s\pi}{p} c$$

$$r^2 = a^2 + b^2.$$

The values of a, b, and r^2 for each integral value of p from 2 to 36 ($s = 1$) were first calculated both for the whole sequence of observations from 1545 to 1844 (N = 300) and for each half of the sequence—1545 to 1694 and 1695 to 1844—taken separately. The same elements for intermediate values of p were obtained by taking second or third harmonics ($s = 2$ or $s = 3$) but only for the whole sequence. Thus for $p = 15\frac{1}{2}$, r^2 represents the second harmonic for 31 ($p = 31$, $s = 2$), and for $p = 15\frac{1}{3}$ it represents the third harmonic for 46 ($p = 46$, $s = 3$).

The table gives a, b and r^2 for the whole sequence 1545 to 1844, and r^2 only for each half sequence.

In order to test the probability of obtaining any given amplitude the standard deviation (σ) of the original observations was calculated, and the expression $\frac{4\sigma^2}{N}$ obtained as representing the mean of the square of amplitude for comparison with the actual amplitudes for different values of p. Then, if the order of the original observations is a random one, the chance of obtaining for any value of p an amplitude equal to or greater than r is e^{-k} where $k = \frac{r^2 N}{4\sigma^2}$. For the sequence 1545 to 1844, $\sigma^2 = 419{\cdot}83$.

Considering first only integral values of p, to which examination was confined in the first instance, the number of 15 years stands out, as yielding very large amplitudes both for the whole sequence and for each of its halves. Analysis at half-yearly intervals (made only for the whole sequence) gives a materially greater amplitude at $15\frac{1}{2}$ years, and finally that at $15\frac{1}{3}$ years proves greater still. The square of the amplitude is 82·31. The maximum phase is given (by the formula $\tan \phi = \frac{b}{a}$) at 246° 50′

Periodogram of Wheat Price Fluctuations (Western and Central Europe).

Period. p.	Sequence of Observations 1545–1844. a.	b.	$r^2 (= a^2 + b^2)$.	Sequence 1545–1694. r^2.	Sequence 1695–1844. r^2.
2	+ ·11	·00	·01	·44	·21
3	− ·29	− ·39	·23	1·28	·03
4	+ 1·47	− 1·13	3·44	2·87	10·64
4½	− 1·15	− 1·71	4·23	—	—
4⅔	+ 1·64	+ 1·05	3·79	—	—
5	+ 1·85	+ ·99	4·43	11·84	4·94
5½	− ·90	+ 1·27	2·42	—	—
6	− 3·50	− ·12	12·29	14·67	23·41
6½	+ 1·41	+ 1·22	3·47	—	—
7	+ 2·44	− 2·11	10·43	13·58	17·15
7½	− ·50	+ ·23	·78	—	—
8	− 2·79	+ 2·06	12·05	4·45	9·97
8½	+ ·99	+ 2·92	9·51	—	—
9	− 1·12	− 1·07	2·39	14·04	2·02
9½	+ ·83	+ 1·71	3·63	—	—
10	− 2·29	− ·38	5·39	37·93	48·56
10½	+ 2·47	− 1·82	9·42	—	—
11	− 4·06	− 4·95	40·93	76·02	7·76
11½	− 2·56	− ·36	6·68	—	—
12	− 3·18	− 3·16	20·11	21·69	35·45
12½	− 1·80	+ 4·04	19·57	—	—
13	+ 3·77	− 3·68	27·81	79·72	82·57
13½	+ 1·78	− 2·02	7·26	—	—
14	+ ·15	− ·01	·02	13·06	32·17
14½	− 3·45	− ·19	11·92	—	—
15	+ 6·32	− 2·72	47·28	70·38	138·25
15⅓	− 3·57	− 8·34	82·31	—	—
15½	− 8·11	− 3·76	79·87	—	—
16	− ·48	+ 4·46	20·14	37·73	2·41
17	+ 3·33	− 4·28	29·35	59·33	24·68
18	− 3·94	+ 1·31	17·26	73·39	4·76
19	+ 1·19	+ ·31	1·50	26·30	15·93
20	− 5·40	+ 1·80	32·44	18·57	29·74
21	+ ·78	+ 2·39	6·33	45·98	12·40
22	+ 2·14	+ 1·71	7·50	17·05	8·92
23	− 2·15	− 1·71	7·54	3·97	33·98
24	+ ·44	+ 5·13	26·48	7·58	40·59
25	+ 3·87	− ·20	14·95	44·05	30·30
26	+ 1·07	− 1·10	3·35	14·14	19·66
27	+ 1·00	− ·49	1·25	6·42	6·96
28	+ 1·17	− 80	2·00	24·35	6·79
29	+ ·75	− 2·12	5·05	33·54	10·36
30	− 1·52	− 2·36	7·86	4·75	11·81
31	− 2·19	+ ·48	5·04	23·10	9·81
32	+ ·31	+ ·98	1·05	28·04	19·25
33	+ ·47	− 1·61	2·82	13·49	36·02
34	− 3·01	− 1·40	11·04	6·41	36·70
35	+ 3·78	+ 1·79	17·52	6·95	37·67
36	− 1·65	+ 4·85	26·27	16·29	39·58

or 10·51 years from the origin; taking this at 1545·50 the first maximum occurs at 1556·01. The value of k is 14·7 and the probability of obtaining a square of amplitude as great as 82·31, if the order of the observations is a random one, is $e^{-14.7}$ or $\frac{1}{2,422,000}$.

This amounts to a demonstration that the order of the observations is not a random one, but that they are arranged on some principle; odds of $2\frac{1}{2}$ millions to one represent an almost superfluous degree of certainty. It is not equally certain that the departure from randomness takes the form of periodicity; theoretically, some other explanation may be within the bounds of reasonable chance. But the most natural, if not the only conceivable explanation, of so emphatic an appearance of periodicity is real periodicity; if harmonic analysis can by itself ever prove the existence of a physical period it seems to do so here.

Here, however, harmonic analysis does not stand by itself. The period shown by harmonic analysis of wheat price fluctuations from 1545 to 1844 is identical in length and phase with that which in March 1920 I derived from the statistics of British exports from 1830 to 1913, before I had ever looked at corn prices. The cycle which I named then was one of "between 15·2 and 15·4 years," reaching maxima in 1832, 1847, 1862, 1877–8, 1893, 1909. As the economic conditions of any one year are influenced less by the harvest of that year than by the harvest of the year before, each of these dates must for comparison with the "crop years" of this article be put a year earlier, to 1831, 1846, 1861, 1876–7, 1892, 1908. The continuity between this cycle and that shown by harmonic analysis in the wheat prices, and appearing unmistakably in the original observations, is absolute.

The period of $15\frac{1}{3}$ years shown in the periodogram is marked out in the observations by peaks at 1556, 1586, 1617, 1648–9, 1678, 1693, 1709, 1724–5, 1740, 1756, 1770–1, 1800–1, 1816, 1830–1, 1846. These form a series of 15- or 16-year intervals all but unbroken from 1678 to 1846,[1] and continued backwards by 30- or 31-year intervals to 1556.

To show the continuity of this series of 15- or 16-year intervals up to 1846 with those yielded by the exports statistics after that date, I have plotted at the end of the chart a curve based on the "exports index" figures described in my first article. I first calculated continuous 15-year averages of the "new exports index" (column 4 on pp. 24–5 of THE ECONOMIC JOURNAL for March 1920), then expressed the figure for each year as a percentage of the mean for 15 years of which it is the centre (so as to eliminate the trend), and finally deducted this percentage

[1] The only gap is at 1785, and is rather remarkable; the weather then and in 1786 was abnormally bad (Annual Register for 1786), but harvests and prices in Europe seem to have been little affected.

from 200 (so as to invert the curve). The resulting figures are plotted from 1840 to 1910. I have not, beyond 1879, used the actual figures given in my first article (based on Sauerbeck's price index), but revised figures based on the Board of Trade index; there is no substantial difference between the two at the important years 1876–7, 1892, 1908. According to the argument in that article, a high point on the curve as now plotted should correspond to deficient harvests and a low point to good harvests, in those countries, taken as a whole, to which British exports go. Actually, in the 30 years' overlap (1840–69) there is close agreement between this curve and that of wheat prices.

The maxima after 1816 reached by taking a cycle of exactly $15\frac{1}{3}$ years from 1556·01 are 1831·35, 1846·68, 1862·01, 1877·34, 1892·67 and 1908·00. For several reasons I am inclined to put the exact length at something less than $15\frac{1}{3}$ years; 15·3 is probably a better figure to use, and is of course quite consistent with the harmonic analysis so far as it has been carried at present.

Mr. Curwen's table shows interesting amplitudes also for one or two other values of p, notably at 10, 11, 13, 17 and 20 years. At 11 years, taking the whole sequence, $r^2 = 40{\cdot}93$, $k = 7{\cdot}3$ and $\varepsilon^{-k} = \frac{1}{1{,}480}$, representing in itself considerable probability of a true period. When, however, the two halves of the sequence are examined separately, the importance of the period is seen to be due entirely to the first half (1545–1694), where it overshadows even the $15\frac{1}{3}$-year period; in the second half (1695–1844) it is absent or insignificant. This is curiously like the behaviour of the 11-year period in Sir Arthur Schuster's analysis of sunspots. The 11-year period was all but invisible in the first half of Sir Arthur's sequence (1750 to 1825), but dominated the second half (1825 to 1900) completely, and so was prominent in the sequence as a whole (1750 to 1900). Meteorological cycles are often meteoric both in their emphasis and in their transience. By way of contrast at 13 years (and again at 10 years), there are large amplitudes for each half of the sequence taken separately, combined with relatively low amplitudes for the whole sequence. This suggests periods near but not very near to these two values of p.

The main result of Mr. Curwen's analysis is to confirm in the strongest possible way my original suggestions. Unless one is prepared to discard the method of the periodogram altogether, as a means of discovering periodicity, it is difficult to doubt that

there is a physical reality behind this appearance of a period of about 15·3 years in the yield of harvests.

But the 15·3-year period, even though it be real, is neither simple nor homogeneous. Three distinct sets of considerations compel us to seek beneath its surface for complex causes :—

First, the recurrences of the 15·3-year cycle, as they appear in economic records, are of varying intensity; in any given series of years alternate recurrences (at distances of 30·6 years) are more marked than those that intervene, as a man walking with a burden may press more heavily with the right foot than the left, and as he shifts his burden may later press more heavily with the left foot than the right. With the outstanding famines of 1556, 1586, 1617; 1630, 1661, 1693; 1709, 1740, 1770, 1800; and 1816 and 1846; we get almost the appearance of a 30·6-year cycle shifting its phase abruptly at times by about half a revolution.

Second, a cycle of 15·3 years has not, so far as I am aware, been found in any meteorological records. On the other hand, as will appear below, there is a singularly close arithmetical relation between 15·3 (or 30·6), and the lengths of some well-supported solar or meteorological cycles, such as $5{\cdot}1\ \frac{(15{\cdot}3)}{3}$; $4{\cdot}37\ \frac{(30{\cdot}6)}{7}$; and $2\frac{3}{4}\ \frac{(30{\cdot}6)}{11}$ years.

Third, the evidence of prices and famines before 1545, though far from complete, suggests on the one hand that the 15·3- or 30·6-year cycles with their present phase were not then in action, and on the other hand that something akin to them but different was in action.

An explanation both of the 15·3-year period itself and of these three sets of facts has now to be attempted, by an examination of the chart of price fluctuations and of the figures that it represents.

Period of 4·374 *Years.*—The analysis may conveniently be begun by considering certain pairs of well-marked peaks each with an interval of 13 years between the two peaks, namely, 1573 : 1586, 1617 : 1630 (with a continuation in 1643), 1661 : 1674 (with a possible precursor in 1648), 1748 : 1761 and 1853–4 : 1866–7. There are also 13-year intervals between markedly high points at 1538 : 1551 and 1757 : 1770 (continued in 1783). The intervals themselves, reckoning from the first year of each pair or group, are separated by distances of 35, 44, 44, 87, 9 and 96 or 97 years. These " distances " are not themselves multiples of anything like thirteen years, but they are one and all close multiples of some-

thing over $\frac{1}{3}^3$, *i. e.* $4\frac{1}{3}$ years. They are not close multiples of $\frac{1}{2}^3$, $\frac{1}{4}^3$, $\frac{1}{5}^3$, or $\frac{1}{6}^3$. Every one of these 13-year intervals would fit the recurrences of a cycle of just over $4\frac{1}{3}$ years, and would fit no other cycle of more than two years in length. Measuring from 1538 to 1866·5 we get 75 revolutions of 4·38 years; taking one maximum as falling near 1866·5 we get another maximum 30·6 years (= 7 revolutions) later, falling somewhere in the harvest year 1897, that is to say, roughly in the twelve months following September 1896. If all these similar intervals have any common cause it must be a cycle of that length and phase. They fit no other cycle.[1]

A physical cycle precisely corresponding to these requirements exists. Among the periods found by Sir Arthur Schuster [2] in the sunspots, by the method of the periodogram, is one to which he assigns a length of 4·38 years and a maximum phase at 1897·00, which would correspond to 1897·33 if we reckon by crop years (beginning on September 1st). It is not one of the more important solar periods, such as 4·77, 8·34, and 11·12 and its harmonics, and it is unlike them in not being accurately divisible into 33·37 years. This is the sort of result to be expected. Solar and terrestrial phenomena are clearly connected, but the causes which give special prominence to particular cycles in the sunspots are inoperative on the earth.[3]

Other considerations give as the most probable length of the cycle 4·374 years with a margin of error ± ·010 years. It will be convenient to assume this length for the future, taking the maximum phase to correspond exactly with that determined by Sir Arthur Schuster for the sunspots, namely, January 1st, 1897, or 1897·33, in crop years. It will be convenient also to designate this cycle by the letter A.

The 13-year interval is not itself a substantive period, but only a manifestation of the A cycle. Is there any reason why this cycle should tend to show itself in 13-year intervals?

[1] In the fifteenth century the only consecutive price records—for Flanders—show 13 years intervals at 1424 : 1437–8 and (less clearly) at 1455 : 1468–9 : 1481–2, *i. e.* at distances of 114 years (26 × 4·38) and 83 (19 × 4·38) years from 1538. There appear to be no other 13-year intervals in the records except at 1502 : 1515 : 1528, when the index rests on a very narrow basis, and 1841 : 1854, where the latter year is suspect as coinciding with the Crimean War. The "exports index" shows a 13-year interval at 1884 : 1897.

[2] Philosophical Transactions of the Royal Society, vol. 206A (1906).

[3] Since I began this investigation Mr. J. Baxendell has found a cycle of 4·37 years in the rainfall at Southport, but with the curious feature that its maxima occur at the minima of Sir Arthur Schuster's sunspot cycle, and so of the suggested cycle in wheat prices.

One reason at once suggests itself. Three revolutions of A =13·12 years, *i. e.* make only very little more than 13 complete years. The effect of any solar cycle in producing a meteorological disturbance and still more in spoiling the harvest must depend upon the season of the year at which it operates. If, in any one year, this particular cycle has reached its maximum at a season making it particularly destructive, it will recur within six weeks of that time about 13 years later and may have a similar effect.

If, however, there is anything in this suggestion, it follows that at the eighth revolution of A when it makes a yet closer approach to a complete number of calendar years (8A = 34·992 = 35 years less 3 days) we should find another set of regular intervals. This is exactly what we do find. The years 1573, 1608, 1643, 1678, 1713, 1748, 1783 are all peaks on the curve of wheat prices and form an unbroken and remarkable series of 35-year intervals, fitting the requirements exactly in length as well as in phase. The series can, in fact, be continued backwards through 1538, 1468, 1433, with an apparent break at 1503, and forwards to 1853 after a break at 1818.

Even more striking is a series of 30 or 31 year intervals: 1556, 1586, 1617, 1648–9, 1678–9, 1709, 1740, 1770–1, 1800–1, which includes most of the worst famines of the whole period. The average length of the interval, reckoning from 1556 to 1800·5, is 30·6 ± ·2. This is identical with seven revolutions of A (= 30·62) and fits the required phase of A. The other constituent of this series of 30·6-year intervals will be identified just below as $\frac{30{\cdot}6}{6}$ or approximately 5·1.

Another well-marked interval is one of 74 to 75 years, shown in 1438, 1512, 1586, 1661, 1735 with earlier famines in 1289 and 1363. Yet another is one of 48 years, 1565, 1613 (well marked in England though not in the general figures), 1661, 1709, 1757. All these years are years of maximum phase for A; the intervals represent almost exactly 17A (= 74·36) and 11A (= 48·11).

We have already mentioned a large proportion of the bad harvests from 1500 to 1870, and several others not already named are found like these to lie at maximum phases of the period A. These include 1521, 1529, 1551, 1625. Of the 26 " major " peaks (reaching 125 and upwards) 16 coincide with maxima of A. The steps leading to the determination of this period have been set out in some detail. In the rest of this article I must content myself with a more summary account.

Period of 5·11 *Years.*—Next to the period already considered, the period most strongly suggested by the economic records is one of about 5·1 years. The most probable length is 5·11 with a margin of error of ± ·05, and the most probable maximum phase is determined by 1709·00. These figures will be assumed in the following discussion, and the period will be denoted by the letter B.

The period B forms the other constituent of the 30·6 year (6A = 30·66 years) interval already mentioned and accounts for 8 out of the 10 major peaks which do not lie at the recurrences of A, namely 1545, 1596–7, 1693, 1698, 1795, 1811, 1816, 1846. The same period accounts for a number of other harvest failures not previously mentioned, such as 1622, 1637, 1703, 1719, 1724.

The meteorological parallel is easy to find. The period most definitely shown of Captain Brunt's recent analysis of the Greenwich temperatures is one of 5·09 years. A period of almost identical length had previously been found by Mr. J. Baxendell in other meteorological phenomena, including the wind and rainfall at Southport. This is, indeed, one of the best established periods in meteorology.

Its exact length, however, cannot be determined with the same accuracy as in the case of A. The length and phase chosen above, namely 5·11 and 1709·00, are such as best fit the economic records. On the other hand, the meteorological records point to something just under 5·1 and a length of 5·06 would be possible. What seems clear is that 7A is not exactly equal to 6B, *i. e.* 30·6 represents not a permanent period but a " conjunction interval." From 1556 to 1800 (and possibly on to 1892) it is continuous. In 1525, and for some centuries before then, the series can hardly be traced at all, but it seems to reappear with exact agreement of phase in the ninth, tenth and eleventh centuries. These phenomena could, I think, be explained most simply by a very gradual increase in the length of B, while A remained constant, so that 6B was $<$7A till the beginning of the twelfth century and since then was $>$7A. Alternatively, one of the periods is subject to sudden changes of phase of which one occurred between 1525 and 1545. Mr. Baxendell suspects either a gradual increase in the length of the B period or a sudden alteration of phase from time to time.

Period of 2·74 *Years.*—A cycle of 2·74 years (described below as C) with a maximum phase at 1709·78 is also suggested by the economic records.

Of the 26 major peaks between 1500 and 1870, 24 lie on either

A or B, and most of the worst famine years lie on both. There remain only 1531 and 1649 (as distinct from 1648). These are separated by 118 years with 1586 breaking in at 55 years. The same distance of 118 years broken in the same way at 55 years (1748) separates the two striking 5-year pairs 1693–8 and 1811–16, which though they actually lie on B clearly call for some additional explanation of their extreme severity. Moreover, 1531, 1649, and 1693 are each preceded at 19 years by another major peak (1512, 1630, 1674). It is inevitable to seek a single explanation of these suggestively similar events, and the explanation is found at once by an analysis of the following 19-year intervals : [1]—

(1512)	(1630)	(1674)	(1748)	(1811)	(1841)
(1531)	(1649)	(1693)	(1767)	(1830)	(1860)

7C = 19·18 and the distances between these intervals 118 (43C = 117·82), 44 (16C = 43·84), 74 (27C = 73·98), 63 (23C = 63·02) and 30 years (11C = 30·14), are all remarkably close multiples of the same period. No other period will fit this series of intervals except one of just over 3·7 years.

11C = 30·14 years, and with this period in conjunction with A and B we seem to get far towards a full explanation both of the alternations in the severity of the famines of the 30·6-year series and of the way in which other bad failures occur at 5, 11 or 16 years distance from the major epochs of that series.

For one or two 30-year intervals, C may keep pretty closely in gear with A and B, but thereafter gets out of gear for two or three intervals and later gets back again. If we set out to write down the assumed dates for A, B and C, with the lengths and phases given above, we find that the occasions since 1500 upon which the maximum phase of C is most distant from the phase of the 30·6-year interval are in 1525, 1648, 1678, 1831, 1861, *i. e.* just the years when the 30·6-year interval is least prominent ; while the occasions on which it is nearest are 1556, 1586, 1709, 1739–40, and 1770, *i. e.* just the years when the 30·6-year interval is most prominent. This suggests that when C is in opposition to A it tends directly to neutralise its effects. On the other hand, just as C is getting out of gear with the 30·6-year interval it gets into position to make a specially close conjunction with A 11 or 16 years before (in 1545, 1693 and 1698) or 11 or 16 years after (in 1596–7 and 1811, 1816).

[1] The only other 19-year interval in the chart is at the very beginning—1502–1521—and is to that extent open to suspicion.

Apart from this, an overwhelming majority of all the famines recorded appear to be associated with recurrences of C.

The meteorological evidence for a period of just about this length is abundant, though not perhaps always of the first quality. According to F. H. Bigelow, a 2·75-year period "is more at the basis of the seasonal variations of the weather conditions in the United States than anything else, so that in long-range forecasting this period must be very carefully considered." [1] The same period was found by H. Arctowski to be much the most important in the temperature variations of the tropics. H. Hansen and F. Nansen over a long period of years get an average period of 32 to 33 months (*i. e.* 2·75 or under) in the temperature at Batavia.[2] It is true that they identify this, as Bigelow does, with one quarter of the sunspot period, which on Schuster's figures would be 2·78 years. The economic records, however, quite definitely postulate something less than 2·75 years, and in so doing are in highly significant agreement with the actual figures both of Arctowski and of Hansen and Nansen.

Period of 3·71 *Years.*—Attention has already been called to the intervals 19, 48 and of 74 to 75 years. The most probable explanation of all these and of other phenomena lies in the assumption of a period of 3·71, with phase near 1708·84, identified hereinafter as "D." A period of this length has been found in the activity of the solar protuberances, and by the Lockyers and Hansen and Nansen in many meteorological phenomena. According to Arctowski, it plays a very great *rôle* in the variations of the terrestrial atmosphere.[3] The evidence for it, however, in the economic records is less definite than in the case of A, B, and C, and some of the intervals (in particular 37 and 74 years of which it is assumed to form a part) might conceivably be explained by a period of just over 6·0 years, for which there is also a good deal of meteorological evidence. In any case it is necessary to allow a fairly liberal margin of error, say ± ·07 of a year in the length assigned to this period. There is a good deal of evidence in favour of a period approaching 3·78 years, which was the actual period found in the sunspots by Sir Arthur Schuster.

Further analysis of the economic records may suggest the operation of yet other periods. For the present, we may content

[1] *American Journal of Science* (1908), pp. 413.

[2] *Temperatur-Schwankungen des Nord-Atlantischen Ozeans und in der Atmosphäre* (1917), p. 188.

[3] *L'enchaînement des variations climatiques* (1909).

ourselves with two calculations which go to confirm the suggestions already made.

The first calculation is suggested by consideration of the greatest famines of all, and particularly those of 1044, 1315, 1438, 1586 and 1709. It is doubtful whether any other harvest failure in the last thousand years of European history can compare with these for severity; each is unquestionably the worst famine of its particular century. From 1044 to 1315 is 271 years; from 1315 to 1586 is 271 years with an intervening famine in 1438, *i. e.* after 123 years; from 1438 to 1709 is also 271 years, divided by 1586 into two portions of 148 and 123 years respectively. Similar intervals occur again and again in the records, *e. g.* 1512 : 1661 : 1783, 1529 : 1651 : 1800 (with earlier famines in 1258 and 1381), 1545 : 1693 : 1816, 1596 : 1719 : 1867, 1608 : 1756 : 1879, 1648–9 : 1770–1, 1698 : 1846, or going back to earlier times in 1125 : 1396, 1145 : 1293–4 : 1416, 1175 : 1446, 1469 : 1617 : 1740, 1477 : 1625 : 1748, 1481–2 : 1630. The significance of these intervals is quite unquestionable; it would be hard to find a harvest failure, great or small, which has not another 271, or 148 (occasionally 149) or 123 (occasionally 122) [1] years away from it; the worse the failure the more marked as a rule is this relation. The economic records show throughout an overwhelming tendency for exceptionally severe famines to repeat themselves at intervals of 271 years, and for this interval to be broken into two portions of 148 and 123 (occasionally 149 and 122) years. No other interval, except perhaps the 30·6-year one, is of comparable importance.

Now if we take the lengths of the four periods named above—4·374, 5·11, 2·74 and 3·71 years—and that of the earth's orbital revolution 1·00 as a fifth period, and write down all the multiples of these numbers up to 500 years, we find that much the nearest approach to a common multiple for all five is made at 271·02 [2] years, and that below this figure the nearest approaches are at

[1] The interval of 122 or 123 years was noticed, in connection with the famines of 1315 and 1437–8, by Thorold Rogers, who spoke of it as occurring so often in the records as to suggest the germ of a theory as to weather periodicity.

[2] This figure is obtained as the mean of 271·19 (= 62A), 270·83 (= 53B), 271·26 (= 99C), 270·83 (= 73D) and 271·00. Exact multiples of all the five periods lie here within a total range of ·43 years and an average range of ·16 years from their mean. The corresponding ranges for the other conjunctions are: ·76 and ·26 (at 148·25), ·87 and ·31 (at 122·77), ·98 and ·34 (at 30·22), and ·98 and ·35 (at 240·80). At no other date within the first 300 years do all the cycles fall within a total range of less than one year, and only twice (at 118·03 and 219·11) are they within 1·25 years. Beyond 500 years another very close conjunction (with total range ·45 and average range ·16) occurs at 608·16 years.

148·25, 122·77, 30·22 and 240·80 years respectively. If four periodic factors, of the lengths given above, were all at or near their maximum phase together in any particular year, they would tend to repeat that close conjunction at the same season of the year 271 years later and, less strongly, at the other intervals named. In other words, if the theory advanced above be correct and exceptionally bad harvests are due to the conjunction of three or more cycles of the lengths already determined, then such exceptionally bad harvests must tend to recur at exactly those rather peculiar intervals of 271, 148 or 149, and 123 or 122 years at which, in fact, they do recur.

Further confirmation is supplied by the fact that the only points (within a period of 500 years) at which two close conjunctions of all the periods, *i. e.* two near approaches to a common multiple, occur within a few years of each other, are at about 118 and 123 years respectively. There are between 1500 and 1850 two and only two pairs at major peaks separated by five-year intervals—namely, 1693 : 1698 and 1811 : 1816. The distance between these pairs is 118 years.

The interval of 271 years is not, of course, a true or permanent period. The conjunction becomes less perfect at each repetition; the series 1044, 1315, 1586, for instance, is not continued at all in 1857. Nor does the calculation just given necessarily confirm in all details the previous analysis; it does not even in itself exclude the possibility that one of the four assumed periods A, B, C or D is non-existent or unimportant. But it is strong ground for holding that at least three of these four are operative, and that their lengths have been determined with a high degree of accuracy.

The second calculation brings into account the influence of the seasons. A meteorological cycle with a period such as 4·374 or 5·11 years cannot be expected to show itself in the harvest records at each return. Sometimes the maximum phase, *i. e.* the phase most adverse to the harvest, will occur at a season when the crop is most subject to its influence and will therefore be operative to a high degree. At other times it will occur at a season when there is no crop in the ground, or when the crop is least liable to that particular meteorological influence; it will then be largely or wholly inoperative.

If we write down the successive maximum phases of A, from 1550 to 1801 (for which the statistics are most reliable), we find that, of 58 such phases, 35 appear to be associated with a bad harvest, as shown by a markedly high or rising price of wheat,

while 23 are not so associated. In other words, the cycle is apparently inoperative on four occasions out of ten, a very large proportion of the whole. If, however, we look at these 23 inoperative maxima more closely, we find that not one of them occurs between ·54 and ·73 years from the beginning of the harvest year, that is to say, between March 15th and May 22nd, while only two of them occur between ·54 and ·87 from the beginning of the harvest year, *i. e.* between March 15th and July 15th. In other words, the year may be divided into two portions, one of four months containing 2 only out of 23 inoperative maxima, and one of eight months containing the remaining 21. It may be added that the four months, March 15th to July 15th, contain 15 maxima altogether, of which therefore 13 are operative and 2 inoperative. It is needless to point out that these four months are, in Western and Central Europe, the most critical for the actual growth of the crop. When the maximum of A falls in those months it is associated with a bad harvest in 13 cases out of 15; when it falls outside those months a bad harvest occurs far less certainly and may often be due to another factor.

The correlation thus appearing between the operation of A and the course of the seasons is the more noticeable because both the length of A and its maximum phase were determined quite irrespective of this calculation.

A similar calculation as to B gives a curiously different result. Between 1550 and 1801, the proportion of operative returns is very much greater than for A—35 as against 12 inoperative and 3 doubtful—and there is no apparent correlation with the course of the seasons. This result, if it can be trusted, suggests that the maximum phase of B is less acute and more dispersed than that of A, *i. e.* has an influence over a greater period before and after the precise instant of maximum. Mr. Baxendell had independently come to the same conclusion as to the character of the two cycles, A and B, as shown in meteorological data.

The point just made has an important bearing on the question of methods for analysing harvest data. Just in proportion as a periodic factor is accurate in the date of its return and concentrated in its influence about that date, it will, owing to the seasonal factor, be inoperative at many of its returns. Direct harmonic analysis of such figures as are used here and also of crop yields may thus fail to show a period which actually exists Indeed, any one meteorological cycle in its influence on the harvests may be, and probably is, subject to interference not only by the seasonal cycle (*i. e.* the earth's orbital period), but

also by other cycles, or depends for its influence upon its conjunction with them.

A liberal amount of rain at certain seasons of the year is not bad for the crops, but good or even necessary for their growth; it is only excess of rain that is harmful. If therefore we have two cycles of the same type, but different periods, *e. g.* two cycles each tending to bring rain at a different periodic interval, we may get a bad harvest and high prices only when both cycles reach their maximum phase at about the same time; the other maximum phases of each cycle may be associated with normal or even particularly good harvests and low prices. Mathematical analysis in which each period is sought for separately may fail to show either cycle in the price of corn, and may at the same time show both in the weather.

Again, a bad harvest failure may depend on the combination of two or three independent meteorological factors of different types—*e. g.* a heavy rainfall, a fall in the solar constant, and some special magnetic condition. A true periodicity depending on the conjunction of such disparate causes may not appear in any meteorological records but may appear in corn prices.

Finally, though the most obvious way in which physical factors would affect the harvests is through the weather (*e. g.* by causing at certain periods excessive rain, cold, or storms), another possibility cannot be excluded. Some physical factors, electrical or other, in the sun or in the earth may affect the growth of corn directly without causing an appreciable change in what is ordinarily known as the weather.

In this and in other ways apparent discrepancies between different classes of records may prove to be no discrepancies at all. For these reasons arithmetical analysis such as has been attempted here may prove valuable after mathematical analysis has been exhausted.

The results of this arithmetical analysis may be summarised as follows:

1. The harvests of Western and Central Europe appear to be affected by the conjunctions and mutual interferences of at least two and probably more periodic factors.

2. One of these factors (A) may be determined with considerable accuracy as having a period of $4{\cdot}374 \pm {\cdot}010$ years with a phase adverse to the harvest near 1709·25 (reckoning by crop years); another (B) has a period of $5{\cdot}11 \pm {\cdot}05$ years and an adverse phase near 1709·00. Two other factors are suggested with lesser degrees of probability, namely C, with a period of

2·74 ± ·01 years and an adverse phase near 1709·78, and D with a period of 3·71 ± ·07 years and an adverse phase near 1708·84. Periods of almost exactly these lengths have been found independently in astronomical or meteorological phenomena.

3. All these periods are almost exactly divisible either into 15·3 years or its double (30·6), and by their combination have during the past 350 years produced the appearance of a cycle of that length which last reached its maximum in 1908. This 15·3-year cycle, however, is probably not a permanent one; the shorter periods may from time to time slip into new combinations or form a fresh 15·3- or 30·6-year cycle with a different phase.

4. The economic records dealt with in this paper relate only to Western and Central Europe. There is evidence of the operation of some at least of the cycles indicated in other parts of the world. This operation, however, is not necessarily simultaneous; differences of phase, above all in the course of barometric pressures, are manifest.

The mesh of Mr. Curwen's mathematical analysis, as given above, is not close enough for it to throw any light, favourable or unfavourable, on the suggestion of those lesser periods, A, B, C or D. In a sequence of 300 years a true period of 4·38 might fail to influence materially the amplitude even at so near a point as 4·33. A more detailed analysis of the same figures has kindly been undertaken for me by Dr. J. T. Brownlee, but is not complete.

Should this show in the economic records any of the lesser periods named, this will of course be strong confirmation of their reality. For the reasons given, however, a failure to discover one of these periods separately by harmonic analysis of wheat prices would not be decisive against its existence, as an influence on harvests.

The present enquiry confirms very closely the suggestions made in my earlier articles. In those articles I called attention to an apparent periodicity in British export figures of 15·3 years, pointing out at the same time that this apparent period clearly resulted from the operation of certain minor cycles, and that one at least of these cycles was a factor, not of 15·3, but of twice that length of time, nearly 30·6 years. In the present article mathematical analysis shows a period of 15·3 years; arithmetical analysis emphasises 30·6 years as the approximate meeting-point of three or more cycles.

In one respect a modification in the wording of my earlier

suggestions must be made. I then spoke of past experience pointing to the coming of lean years in 1924, 1925 or 1926. The economic records of any year, however, reflect generally the harvest conditions of the year before. If I had now to prophesy I should point to 1923 as likely to be distinguished by excessive rain, cold and bad harvests in Western Europe, and to bring high prices and scarcity in 1924. But the time for prophecy is not yet. There is still time for enquiry.

Conclusion.

There is hardly any enterprise more deluding or more desperate than the search for weather cycles. The gold we gather turns incessantly to ashes. But the 15·3-year cycle seems to have the ring of true metal. As an influence on wheat prices it issues, brilliant and unmistakable, from the crucible of mathematical analysis. It had already been found independently in other figures. It seems to have maintained itself for more than 350 years.

Recognition of a periodicity so marked and so long-lived must affect our whole attitude to the general problem of weather cycles. But it leaves us faced by many and difficult problems. I must be content to end by summarising my present conclusions in three propositions of a descending order of certainty:

First, the yield of harvests in Western and Central Europe from the middle of the sixteenth to the opening of the twentieth century has been subject to a periodic influence or combination of such influences tending to produce bad harvests at intervals of about 15·3 years, the first epoch falling in 1556. This proposition is about as certain as harmonic analysis can make it.

Second, this period of 15·3 years, though corresponding to certain physical facts, is not a permanent one, but arises from a temporary combination of two or more shorter cycles. This proposition, though not certain, is in both of its branches highly probable.

Third, the shorter cycles whose combination has given rise to the 15·3-year period from 1556 onwards, and which are themselves more permanent than their combination, are those named above as A = 4·374 years, B = 5·11 years, and (probably) C = 2·74 years and D = 3·71 years. This proposition is a speculation as to whose plausibility and truth different readers will take different views.

On this last issue we may look for some enlightenment in the near future. The next maximum phase of the 15·3-year cycle is due in 1923, 123 years from the memorable dearth of 1800.

If that cycle is operative and punctual the harvests of Western Europe reaped in 1923 will be generally deficient. If they are up to or above the normal, or if the worst harvest failure comes just too soon, in 1922, or just too late, in 1924, this will not disprove the reality of the 15·3-year period itself; such departures from strict accuracy have happened before. But it will disprove the explanation of that period offered in my third proposition above, and set out at length in the preceding arithmetical analysis. All the four cycles inferred by that analysis are due to return to a maximum phase between February and September 1923, a remarkably close conjunction. If the harvest of that year is deficient, this will tend to confirm my third proposition; the worse the harvest the stronger the confirmation. In the excessively improbable event of my arithmetical analysis being complete and accurate in every particular, 1923 is destined to repeat something like the experiences of 1315, the year of the worst and most general harvest failure known in European history. But it would be as rash to count on this without further enquiry, as to postpone such inquiry till it must be too late to influence our actions. It is with this in view that I have written.

The foregoing discussion, as I am only too well aware, only touches the fringe of the subject. I would gladly have postponed further publication upon it. But the time which I can devote to it is limited and uncertain. Meanwhile, the possibly critical year 1923 approaches. I give the material as I have it at present, in the hope that it may induce and repay study by others.

W. H. BEVERIDGE

APPENDIX.

WHEAT PRICES IN WESTERN AND CENTRAL EUROPE 1500–1869.

	Actual Index Number for Year.	Index of Fluctuation (t).		Actual Index Number for Year.	Index of Fluctuation (t).		Actual Index Number for Year.	Index of Fluctuation (t)
1500	17	106	1506	14	87	1512	23	135
1501	19	118	1507	14	88	1513	18	104
1502	20	124	1508	14	88	1514	17	96
1503	15	94	1509	11	68	1515	20	110
1504	13	82	1510	16	98	1516	20	107
1505	14	88	1511	19	115	1517	18	97

NOTE.—The "Actual Index Number for Year" is the mean of the index numbers for the countries and places included, each of these being reduced to basis: Mean of prices for 1700–1745 = 100.

The next column, headed "Index of Fluctuation," shows the actual index number for each year as a percentage of the mean of the actual index numbers for 31 years of which that year is the centre.

	Actual Index Number for Year.	Index of Fluctuation (t).		Actual Index Number for Year	Index of Fluctuation (t).		Actual Index Number for Year.	Index of Fluctuation (t).
1518	14	75	1581	55	87	1644	98	96
1519	16	86	1582	54	83	1645	84	82
1520	21	111	1583	56	85	1646	90	88
1521	24	125	1584	52	76	1647	120	116
1522	15	78	1585	76	110	1648	124	122
1523	16	86	1586	113	161	1649	136	134
1524	20	102	1587	68	97	1650	120	119
1525	14	71	1588	59	84	1651	135	136
1526	16	81	1589	74	106	1652	100	102
1527	25·5	129	1590	78	111	1653	70	72
1528	25·8	130	1591	69	97	1654	60	63
1529	26	129	1592	78	108	1655	72	76
1530	26	125	1593	73	100	1656	70	75
1531	29	139	1594	88	119	1657	71	77
1532	20	97	1595	98	131	1658	94	103
1533	18	90	1596	109	143	1659	95	104
1534	16	76	1597	106	138	1660	110	120
1535	22	102	1598	87	112	1661	154	167
1536	22	100	1599	77	99	1662	116	126
1537	16	73	1600	77	97	1663	99	108
1538	19	86	1601	63	80	1664	82	91
1539	17	74	1602	70	90	1665	76	85
1540	17	74	1603	70	90	1666	64	73
1541	19	76	1604	63	80	1667	63	74
1542	20	80	1605	61	77	1668	68	80
1543	24	96	1606	66	81	1669	64	74
1544	28	112	1607	78	98	1670	67	78
1545	36	144	1608	93	115	1671	71	83
1546	20	80	1609	97	94	1672	72	84
1547	14	54	1610	77	93	1673	89	106
1548	18	69	1611	83	100	1674	114	134
1549	27	100	1612	81	99	1675	102	122
1550	29	103	1613	82	100	1676	85	102
1551	36	129	1614	78	94	1677	88	107
1552	29	100	1615	75	88	1678	97	115
1553	27	90	1616	80	92	1679	94	113
1554	30	100	1617	87	100	1680	88	104
1555	38	123	1618	72	82	1681	79	92
1556	50	156	1619	65	73	1682	74	84
1557	24	71	1620	74	81	1683	79	86
1558	25	71	1621	91	99	1684	95	101
1559	30	81	1622	115	124	1685	70	74
1560	31	84	1623	99	106	1686	72	75
1561	37	97	1624	99	106	1687	63	66
1562	41	105	1625	115	121	1688	60	62
1563	36	90	1626	101	105	1689	74	76
1564	32	78	1627	90	84	1690	75	79
1565	47	112	1628	95	97	1691	91	97
1566	42	100	1629	108	109	1692	126	134
1567	37	86	1630	147	148	1693	161	169
1568	34	77	1631	112	114	1694	109	111
1569	36	80	1632	108	108	1695	108	109
1570	43	93	1633	99	97	1696	110	111
1571	55	112	1634	96	92	1697	130	128
1572	64	131	1635	102	97	1698	166	163
1573	79	158	1636	105	98	1699	143	137
1574	59	113	1637	114	105	1700	103	99
1575	47	89	1638	103	97	1701	89	85
1576	48	87	1639	98	93	1702	76	72
1577	49	87	1640	103	99	1703	93	88
1578	45	79	1641	101	99	1704	82	77
1579	53	90	1642	110	107	1705	71	66
1580	55	90	1643	109	106	1706	69	64

	Actual Index Number for Year.	Index of Fluctuation (t).		Actual Index Number for Year.	Index of Fluctuation (t).		Actual Index Number for Year.	Index of Fluctuation (t).
1707	75	69	1762	124	97	1817	266	126
1708	134	125	1763	113	88	1818	197	94
1709	183	175	1764	122	95	1819	177	86
1710	113	108	1765	130	101	1820	170	84
1711	108	103	1766	137	106	1821	152	76
1712	121	115	1767	148	113	1822	156	77
1713	139	134	1768	142	108	1823	141	71
1714	109	108	1769	143	108	1824	142	71
1715	90	90	1770	176	131	1825	137	69
1716	88	89	1771	184	136	1826	161	82
1717	88	89	1772	164	119	1827	189	93
1718	93	94	1773	146	106	1828	226	114
1719	106	107	1774	147	105	1829	194	103
1720	89	89	1775	124	88	1830	217	110
1721	79	79	1776	119	84	1831	199	105
1722	91	91	1777	135	94	1832	151	82
1723	96	94	1778	125	87	1833	144	80
1724	111	110	1779	116	79	1834	138	78
1725	112	111	1780	132	87	1835	145	82
1726	104	103	1781	133	88	1836	156	88
1727	94	94	1782	144	94	1837	184	102
1728	98	101	1783	145	94	1838	216	117
1729	88	90	1784	146	92	1839	204	107
1730	94	96	1785	138	85	1840	186	95
1731	81	80	1786	139	84	1841	197	101
1732	77	76	1787	154	93	1842	183	92
1733	84	84	1788	181	108	1843	175	88
1734	92	91	1789	185	108	1844	183	92
1735	96	94	1790	151	86	1845	230	115
1736	102	101	1791	139	78	1846	278	139
1737	95	93	1792	157	87	1847	179	90
1738	98	91	1793	155	85	1848	161	80
1739	125	122	1794	191	103	1849	150	74
1740	162	159	1795	248	130	1850	159	78
1741	113	110	1796	185	95	1851	180	86
1742	94	90	1797	168	84	1852	223	105
1743	85	81	1798	176	87	1853	294	138
1744	89	84	1799	243	120	1854	300	141
1745	109	102	1800	289	139	1855	297	138
1746	110	102	1801	251	117	1856	232	107
1747	109	100	1802	232	105	1857	179	82
1748	120	109	1803	207	94	1858	180	81
1749	116	104	1804	276	125	1859	215	97
1750	101	90	1805	250	114	1860	258	116
1751	113	99	1806	216	98	1861	236	107
1752	109	95	1807	205	93	1862	202	92
1753	105	90	1808	206	94	1863	174	79
1754	94	80	1809	208	94	1864	179	81
1755	102	85	1810	226	104	1865	210	94
1756	141	117	1811	302	140	1866	268	119
1757	135	112	1812	261	121	1867	267	118
1758	118	95	1813	207	96	1868	208	93
1759	115	91	1814	209	96	1869	224	102
1760	111	88	1815	280	130			
1761	127	100	1816	381	178			

The table is based on lists of wheat prices in the following places and countries, the lists being used in each case for the crop years stated.

Great Britain.

Oxford	1594–1809
Cambridge	1594–1793
Windsor	1594–1809
Haddington(shire)	1627–1789
Edinburgh(shire)	1640–1809
Portsmouth	1678–1776
Berwick(shire)	1689–1792
Aberdeen(shire)	1690–1809
England (Rogers' Averages)	1485–1593
England (Gazette Average)	1810–1884

North Germany.

Xanten	1550–1815
Lüneburg	1550–1629
Hildesheim	1567–1661
Leipzig	1592–1617 and 1671–1825
Hanover	1589–1748
Brunswick	1600–1749
Halle	1600–1749
Berlin	1623–1815
Einbeck	1634–1750
Erfurt	1650–1774
Nordhausen	1675–1774
Dantzig	1702–1815
Bremen	1709–1815
Emden	1771–1815
Prussia	1815–1869

France.

(Excluding 1790–1795).

Paris	1520–1630 and 1673–1754
Albi	1520–1744
Annonay	1570–1754
Chateaudun	1583–1754
Rozoy-en-Brie	1595–1745
Grenette de Bourg	1613–1649 and 1673–1754
St. Etienne	1641–1754
Aubenas	1670–1754
Lyons	1673–1754
Orleans	1684–1750
Villeneuve-de-Berg	1700–1754
France	1755–1884

South Germany, etc.

(Excluding 1620–1648).

Strasbourg	1485–1874
Wurtemburg	1500–1617
Bale	1501–1682 and 1751–1797
Munich	1636–1854
Landeshut	1639–1699
Prague	1654–1799
Breslau	1700–1809
Vienna	1705–1783
Austria	1784–1856

Low Countries.

Utrecht	1495–1643
Gand, etc.	1485–1793
Ypres, etc.	1485–1548 and 1599–1793
Bergues	1485–1548
Lille	1549–1666
Arnhem	1567–1868
Douai	1688–1785
Belgium	1800–1884

NOTE.—Since the foregoing article was printed I have myself obtained for 5·11 years ($p = 46$, $s = 9$) a very large amplitude ($r^2 = 32{\cdot}53$) in the wheat prices, with maximum phase practically at the origin 1545·5. This amplitude is much more than can be explained as a harmonic of the $15\frac{1}{3}$ year period (the second harmonic of this, at $7\frac{2}{3}$ years, gives $r^2 = 7{\cdot}21$ only) and to my mind establishes the reality of the B cycle, which has thus been found independently by harmonic analysis in at least three sets of records (wheat prices, temperature, rainfall).

The A cycle seems to show itself in a small peak on the periodogram at 4·375 ($r^2 = 6{\cdot}851$); the amplitude is too low to be convincing, but a large amplitude was not to be expected.

The C and D cycles have not yet been traced. W. H. B.

THE APPLICATION OF THE THEORETICAL APPARATUS OF SUPPLY AND DEMAND TO UNITS OF CURRENCY[1]

I HAVE used what will perhaps appear a somewhat clumsy phrase in place of the more familiar "Laws of Supply and Demand," or even the "theory of the relation of demand and supply to value," because I think it desirable to suggest that "Supply and Demand" are heads of arrangement rather than the name of a doctrine. When we say that the value of a thing depends on supply and demand, we do not, or at any rate ought not, to mean more than that we think it will be convenient to arrange the causes of changes in value under those two heads.

The stock of some things (such as milk, or even wheat) in hand at any one moment is so small in proportion to the annual produce, that we think of the stream of produce as furnishing the supply, and the ability and willingness of people to consume the thing as furnishing the demand. Of other things, such as land and railways, the annual production is so small compared with the stock, that we think of the stock as furnishing the supply, and the ability and willingness of people to use the thing as furnishing the demand.

Currency belongs to the second class. It is one of those durable instrumental goods of which the stock at any moment is very large in proportion to the annual gross additions to and gross subtractions from the stock.

We may consequently think of the supply, as we think of the supply of houses, as being the stock rather than the annual produce; and we may think of this supply, as we think of the supply of houses, as being increased by net additions to the stock, and decreased by net subtractions from it.

Following the same line with demand, we must think of the demand for currency as being furnished, not by the number or amount of *transactions*, but by the ability and willingness of persons to *hold* currency, in the same way as we think of the demand for houses as coming not from the persons who buy and

[1] Read before Section F of the British Association, Edinburgh, 1921.

re-sell or lease and sub-lease houses, but from the persons who *occupy* houses. Mere activity in the house market—mere buying and selling of houses—may in a sense be said to involve "increase of demand" for houses, but in the corresponding sense it may be said to involve an equal "increase of supply"; the two things cancel. The demand which is important for our purposes is the demand for occupation. In the same way, more transactions for money—more purchases and sales of commodities and services—may in a sense be said to involve increase of demand for money, but in the corresponding sense it may be said to involve an equal increase of supply of money; the two things cancel. The demand which is important for our purpose is the demand for currency, not to pay away again immediately, but to *hold*. Just as you are a less important demander of houses if you occupy a £1000 house than if you occupy a £2000 house, so you are a less important demander of currency if you keep on the average £5 in your pocket than if you keep £10.

It may be said that, in addition to the demand of persons and institutions for currency to *hold*, there is also sometimes a demand by banks and governments for currency to *destroy*, as, for example, at present in this country, when the Treasury is buying in Currency Notes and burning them. But as this demand always, or almost always, comes from institutions which have issued quantities of paper and subsequently repented, it is usually regarded as simply reducing the supply instead of increasing the demand. In favour of regarding the institution as a demander, it may of course be said that the fact that it acquires the currency to burn rather than to hold is immaterial, since it makes no difference whether the currency acquired is held or burnt, provided it is not reissued. It is, some one may say, all the same whether Currency Notes which have been withdrawn have been burnt or are stored somewhere in the Bank of England. But this is not quite true, since, if the notes were still held, they would appear in the total stock which we have agreed to call the supply, whereas, having actually been destroyed, they no longer appear in the total. Consequently it is more convenient to follow ordinary usage in this matter, and speak of banks and governments which buy up and burn currency as reducing the supply.

To clear up our ideas about the demand for currency, let us think of a few obvious causes of increase and decrease of demand for it.

The most obvious cause of increase of demand for a currency is an increase in the number of persons who use it. At a very

early age—often at his or her christening—each new member of the human race begins to hold a small quantity of currency, and the child of six sometimes has more than his father or mother. There are plenty of examples of increase of demand from this source having been sufficient to cause a noticeable increase in the value of a currency which is limited in amount—the Indian rupee after the closing of the Indian mint and the American greenback are often quoted, and the general increase of gold and silver-using populations, though it has not actually raised the value of gold and silver currencies, has at any rate obviously prevented them from falling as fast as they would otherwise have done. The great rise of prices after the Black Death may be given as an example of the converse effect of diminution of population in diminishing the demand for, and consequently the value of a currency.

The introduction of anything which economises currency, *i. e.* which makes it unnecessary for people to keep so much currency by them on the average, tends to diminish the demand for currency. To take the simplest possible example, suppose a landlord living on his rents paid quarterly, and that neither he nor his farmers have bank accounts. The farmers will have to accumulate a considerable sum in currency towards quarter-day, and this will then be handed over to the landlord, who will only *de*cumulate it gradually as the next quarter wears on. Between them they will always have a large sum of currency, the landlord holding most of it at the beginning of the quarter and the farmers the most of it at the end. But if a bank is started, and they all open accounts at it, the farmers will no longer accumulate currency to pay rents with, but will accumulate balances at the bank, and when quarter day comes will order the bank (by their cheques) to pay the landlord, who will be content to see their balances transferred to him, and will not want the store of cash which he formerly required. The bank, of course, will provide a new demand for currency, since it will require a full enough till, but enough for it will be very much less than the amount formerly required by the farmers and landlord.

That banks economise currency in this way is obvious, but there is no possible means of discovering or estimating *how much* they economise it. We may know that we keep an average of £10 a head in currency now, when we have banks, but we cannot possibly form the wildest guess how much we should keep if there were no banks. Some of us would probably never have been born : the whole situation of the world would be different.

No doubt some other ingenious methods of economising currency would have been devised if some ban had been placed on banking.

A change in the distribution of wealth may cause a change in the demand for currency. If the rich and banking portion of the people becomes richer, it does not keep appreciably more currency in its pockets, but increases its balance at the bank. But if the poorer non-banking portion becomes richer, it does accumulate currency, not only in its pockets, but also in money-boxes and mugs on the chimney-piece and other strange places.

Innumerable are the changes of social circumstances which may lead to greater or less economy of currency, and consequently less or greater demand for currency. The calling up of men for military service, and subsequently the large removal of women from their homes for munition-making and other purposes during the recent war, greatly increased for the time the demand for currency, because the members of families, when separated, found it convenient to keep much more currency by them in the aggregate than when they were living at home and together.

Like the demand for other things, the demand for currency is liable to be varied by the miscalculations of mankind about the future. If we were all level-headed prophets, fluctuations of prices would be smoothed out. There would still be slowly rising and falling tides, but waves would disappear. But in fact we all foresee wrong, and our individual mistakes do not balance each other—we foresee wrong to some extent in unison. One year we agree in over-estimating the potato crop, and the next year in under-estimating it: when we over-estimate it, our willingness to buy early is less than if we foresaw correctly, and for the time demand is kept below what it would be if prices were kept as stable as possible. The same thing happens with currency, though it is not nearly so obvious. If there is a predominating impression that prices in general are going to rise, there will be a predominating tendency to hold commodities for the rise, which will itself raise prices at once. Every one can see this, but few notice that this tendency to hold goods back, resulting in a rise of prices, is the same thing as a diminution in the demand for currency. Currency becomes the depreciating article which people in general are less willing to hold. Vice versa, if it is generally expected that prices will fall, most people are more eager to get rid of goods and are more willing to hold currency.

You must not expect to find evidence of increased or decreased willingness to hold currency in actually increased or decreased

stocks of currency. If the total is a fixed amount it cannot vary in that way. The evidence is to be looked for in the fact that more or less goods are actually being given for the unit of currency. You can have an increased and a decreased demand for houses without finding any alteration in the number or size of houses.

The effect of misguided speculation for the rise or fall of the value of a currency is disguised, so far as internal speculation is concerned, by taking the form, in each individual case, of speculation for the fall or rise of particular commodities. Very few persons grasp the idea of a rise and fall in the value of their own country's money, and the Money Market is a place where you deal in loans, not in money. We have not yet risen to the height of having a Currency Market in which you can buy and sell future Board of Trade, Statist and other Index Numbers. But direct speculation in the currency of other countries is common enough, and is often ill-informed enough to cause great disturbances of values, instead of smoothing them down. Some time ago, the editor of an Athens newspaper was unable to go to a certain restaurant there because the waiters worried him with questions about the future of Austrian crowns which they were holding. When the British troops first went to Cologne, they bought German marks because they saw that the mark was "lower than usual." It is known that many milliards of the depreciated currencies are held by foreigners. Such holding is, of course, a pure addition to the usual demand for currency, and tends to maintain its value for a time. Eventually, however, the foreign holders decide to sell, and their decision is much more likely to come at a time when it will make a fall more precipitous than when it will moderate a rise. This ignorant speculation of foreigners has been the cause of many violent fluctuations of currency values and is a great support of the doctrine that they "depend on confidence." About that we need not say more than that the price of sugar also is affected at any moment by people's views of what it will be in the future, but we do not say that "the price of sugar depends on confidence."

The supply being taken as fixed, *how much* will a given increase of demand send up the value of currency? One difficulty in answering the question arises from the fact that we have no easy means of measuring increase of demand, and consequently scarcely know how to exemplify a "given increase of demand." But one example seems workable. Suppose that to a country with a particular currency of its own there is added a new province

one-tenth as large and with exactly similar characteristics, which has just, by some accident, lost all its own currency, and that the annexing country creates no additional currency, but allows the new province to supply itself as best it can. We may look on this as providing, after some initial disturbance, 10 per cent. of additional demand. The people in the new province, wanting a medium of exchange, would have to give people in the rest of the country commodities and services to induce them to part with some of their holdings of currency; these sales would send down the prices of commodities and services, and correspondingly elevate the value of currency. How much in the end, when things had settled down, would depend on what we have learnt from Marshall to call "the elasticity of the demand" for currency. This has often been supposed to be what he calls "unity," which would mean that an increase of demand would cause an exactly proportional rise in the value of currency and a reciprocal fall of prices. So that, for example, in the case given above, when the new province was provided with its one-eleventh of the whole currency, prices would be down one-eleventh and the value of the unit of currency up one-tenth. We can see why if we reflect that when prices fall from eleven to ten, and £10 consequently buys as much as £11 did before, we will find it convenient to carry only £10 about with us instead of the £11 we did before. So, to induce the old country to part with one-eleventh of its stock, a reduction of prices by one-eleventh will be required and be sufficient. But we shall do well not to accept this doctrine that the elasticity of the demand for currency is always unity, till we have considered it in relation to supply. We shall then see reason to doubt it.

Now let us turn to the Supply side of the question, asking ourselves about the effect of alterations in supply of currency.

Given a certain demand, increase of supply, in case of any article, reduces value, and currency is no exception. The additional supply of currency is usually given by the producer, or issuer, in exchange for commodities and services, and his coming in as a new and additional buyer of such commodities and services raises the price of those things and diminishes the value of what he is offering—that is, currency. Sometimes, indeed, he gives the new currency away in doles and pensions without getting any return (except ingratitude), but this is not essentially different, since then the recipients of his gifts are the new and additional buyers.

Great confusion is often introduced at this point by neglect

of the distinction pointed out by Sidgwick between increase of demand and what he calls "extension of demand." We often say that the demand for a thing has increased when we only mean that people are taking more of it because they can get it cheaper. It is obvious, however, that it is not this kind of increase of demand that we have in mind when we discuss the effect of increase of demand upon values. We could not say in the same breath that increase of demand for houses raises the value of houses, and that a fall in the value of houses causes an increase of demand for them. We can say in the same breath, that increase of demand raises the value of houses, and that the fall of value *extends* the demand for them (or, vice versa, a rise of value *contracts* the demand). No more in the case of currency than in any other case does the increase of supply defeat itself by causing *increase* of demand. It only *extends* demand, inducing people to hold more currency because the fall of value makes it possible to hold larger amounts with equal sacrifice and necessary to hold larger amounts to secure equal convenience. People will take the additional currency as they take additional whisky when it is watered and offered to them at a lower rate, but that does not show that, in the absence of increase of demand in the narrower sense, they will take additional whisky or additional currency at the old rate.

The next question is *how much* a given addition to the supply of currency will raise prices and lower the value of the unit of currency? This is really the same question that we have already asked in regard to the effect of a given increase of demand. The answer is the same—it depends on the elasticity of demand, and there is the same *primâ facie* reason for believing that the elasticity at bottom is unity, so that, always in the absence of any increase or decrease of demand in the narrow sense, an increase in the supply should cause an exactly reciprocal diminution in the value of the currency. But great doubt is thrown on the doctrine when we reflect that if it were universally true, issuers of legal tender could go on buying goods and services with new issues indefinitely. The process of doubling the currency in, say, the first month, would indeed gradually bring the purchasing power of the unit down to one-half, but as the issuer at the beginning would be buying very near old prices, and only at the end at the new prices, he would have acquired goods and services worth over three-quarters of the value of the total of the old currency. By another issue equal to the old currency he would only get half as much, but there is nothing

to prevent him issuing twice as much in the second month, four times as much in the third, eight times in the fourth, and so on, and then he will be able to go on acquiring the same amount of commodities per month indefinitely. Experience seems to show that the unit of a currency falls to zero in value long before the supply of the currency reaches infinity, and believers in the doctrine have been unable to explain why. They have contented themselves with eluding the point by means of propositions, such as "however many kronen the Austrian Government issues, so long as they really circulate, they will always have some value, however small." [1] No doubt; but is it not equally true that so long as they have some value they will continue to circulate? They will stop circulating when they lose all value. The explanation seems to lie in the fact that human intelligence anticipates what is coming. When it is seen that the value of currency is steadily falling, people see that it is more profitable to hold goods than currency, the demand for currency fails to extend in proportion to the enlargement of the supply, and its value consequently falls more rapidly. The issuer very likely redoubles his efforts to keep up with the fall by issuing new currency at a still more rapidly increasing rate, but all to no purpose—he is bound to lose the race, and the reason is that the elasticity of demand is less than unity.

In the converse case, that of reduction in the supply of currency, there is also reason to expect an elasticity less than unity. As general prices fall owing to the reduction, people will endeavour to protect themselves by displaying greater readiness to part with goods and services, and less to part with currency, and anticipation will thus cause the fall of general prices to outrun the diminution of currency. Pushed to the extreme limit, the policy would put a stop to the circulation of the currency, as it would all be hoarded, and exchanges of goods would be made by barter. But things are never pushed so far, because, long before, substitutes for the existing currency are always introduced and check the rise of purchasing power. For example, as soon as a reduction of our present paper currency went so far as to make £1 of it worth more than 113 grains of fine gold, substitutes for it would begin to come into use in the shape of sovereigns and half-sovereigns.

Lovers of paradox might say that a currency may go out of

[1] I quote from Miss Van Dorp's review of Dr. G. M. V. Stuart's *Inleiding tot de Leer van de Waardevastheid van het Geld*, in ECON. JOURN., June, 1921, but I am not sure whether the opinion is that of the author or the reviewer, or both.

use either because it is too cheap, or because it is too dear, but that is not the true conclusion of my argument. The true conclusion is that a continuance of rapid change in either direction will cause a currency to go out of use. This is perfectly reasonable, stability of value being one of the most important requisites of useful currency, and Gresham's law that bad money drives out good being fortunately quite untrue of the long run.

EDWIN CANNAN

THE PRESENT POSITION OF INDUSTRIAL WOMEN WORKERS

I. THE economic position of industrial women at the present time is one of danger and difficulty. The cessation of war-time activities, combined with the dislocation of foreign exchanges and the impoverished condition of a large part of the Continent of Europe, caused a drop in the demand for labour which is especially felt by industrial women workers. Women are being thrown out of work in large numbers, and the situation is in some quarters made use of to force down their wages to pre-war levels. Reductions of wages are threatened: directly through cuts made by the employer in unregulated trades, and by attempts to evade the payment of rates already fixed in Trade Board industries; indirectly by attacks on the institution of Trade Boards.

Cases have been taken into court this year in respect of wages paid to girl workers at rates as low as seven-eighths of a penny per hour (*Times*, Aug. 25, 1921). Other instances have been given in the Press of wages in large provincial towns as low as 4*s*. to 10*s*. a week for full-time work in cafés and restaurants, and a curious contrast was observed in one of these towns, where the waitress in a co-operative café was receiving 35*s*. for a week of forty-four hours. Instances of very low wages, from 9*s*. a week and upwards, are given in the 46th Report of the Women's Trade Union League.

The anomaly of a wide disparity in wages for the same work, which was often noticed as characteristic of the "sweated" industries investigated before the passing of the Trades Boards Act, is again reported. Thus in regard to the sack and bag industry, last June, the Ministry of Labour received information that the London federated firms were paying 37*s*. to £2 a week, while the non-federated firms were paying 11*s*. to 16*s*. Such instances are frequently met with in industries where wages are unregulated. Whereas the price of commodities tends to uniformity in a given market, the price of labour, to use a con-

venient if unpleasing phrase, often varies to an extraordinary degree, and the conscientious employers who, whether from motives of humanity, efficiency, or the simple desire to avoid trouble, pay fair wages, are constantly liable to be undercut by less scrupulous employers.

Miss Constance Smith, in a book on wages boards, written just before the Trades Boards Act was passed, prophesied that the first effect of such boards would be one of steadying and regularising rather than of greatly raising wages; a limit would be set to undercutting. This forecast proved correct. A great part of the value of the work done by the earlier Trade Boards consisted in the check placed on the anarchic fluctuations in the rate of pay. The wages fixed were far from being extravagant—indeed in many cases they were not sufficient for healthy maintenance. So low was the standard of those days that in some trades a minimum of $3\frac{1}{2}d.$ an hour constituted a distinct advance, even for adult workers. The great point of Trade Boards regulation was that its action was preventive. Some degree of security was attained in the industries concerned, and a stop was put to the downward tendency that seems inevitable in unorganised trades. Extreme under-payment became illegal and a minimum standard for unskilled workers was created.

During the War, as we all know, an unparalleled demand for women's labour occurred, and women's wages rose to heights previously undreamed of, though, owing to the rise in the cost of living, the rise in wages was less than it appeared. Mrs. Barton, in a valuable paper (published in the *Journal of the Royal Statistical Society*, July 1921), made an estimate of the advance in real wages. Allowing for higher prices, at the end of 1920, "practically all the legal rates" (*i. e.* for unskilled workers) lay between 34*s.* and 37*s.*[1] This was equivalent to a weekly wage of 12*s.* 6*d.* or 13*s.* 6*d.*, as compared with the 10*s.* a week which was a common wage in unorganised trades in the years preceding the War, *i. e.* an advance of about 30 per cent.

Omitting war-time fixations, we find in the statistics given by Mrs. Barton that the Trade Board rates fixed in various clothing trades from November 1918 to March 1921 varied between 25*s.* and 44*s.*, except for some classes of fur workers and a particular class of retail bespoke tailoresses, who were assigned specially high rates. The figure most largely represented was 34*s.*, the rate for seven different groups. These are minimum time rates for workers over eighteen, and so are the

[1] The laundry rates alone fell below this level.

figures that follow. Piece-workers and specially expert workers may, of course, receive higher rates.

The figures given by Mrs. Barton for the Trade Board rates in the distributive trades (a few of which were then only "proposed," not fixed rates) vary from 20*s.* 6*d.* to 42*s.* 6*d.* for women workers of eighteen and over, wages of 28*s.* and under 30*s.* being the most numerous groups.[1] In the laundry trade the latest weekly wage (time rate for workers of eighteen and over) was 30*s.* in November 1920, with considerable variations, *i. e.* less for "new entrants," and higher hourly and piece rates for emergency and casual workers. The Trade Board rate in metal trades was 36*s.* for experienced workers of eighteen and over.

These figures give a general idea of the situation in regulated trades prior to the present wave of unemployment. Further details and statistics would run beyond the limits of our space, and are unnecessary, as Mrs. Barton's paper can be easily referred to by those who desire more particulars.

II. Quite recently a large number of proposals have been laid before the Boards to reduce the rates in force by amounts usually somewhere about 10 or 12 per cent.: *i. e.* from 9½*d.* to 8½*d.* an hour, from 9*d.* to 8*d.*, from 8¼*d.* to 7½*d.*, and so on, the idea being that wages should now suffer some reduction in accordance with the fall in the cost of living. In one instance the proposal was to reduce the rates by 20 per cent., but in this case the workers' representatives left the meeting to mark their displeasure, and the proposal was subsequently reduced to 12½ per cent. This incident is highly significant. It indicates that the Trade Board has the important function of interposing an interval for consideration, "putting on the brake," where violent reductions of wages are attempted by employers in a hurry. In spite of all the troubles and difficulties of the present time, we are in this respect already a more civilised society than in the early years of the century. Wages, in regulated trades, can no longer be treated in the arbitrary fashion of those days; before a drastic reduction can be made the question must be referred to a legal authority, on which both sides are fully represented, and thus gets a chance of being decided on its merits.

In 1919 this was thoroughly realised, and the Ministry of Labour undertook that Trade Boards should be set up with all possible speed in order to deal with wages in low-paid trades during the period of reconstruction. Certain of the boards

[1] "Numerous" refers to the decisions of trade boards, not to the workers affected as to whose numbers the paper gives no information.

promised were set up, but in many other cases the pledge has not been redeemed, and the Minister of Labour has delayed or prevented the setting up of Trade Boards. In the House, in answer to a question, he assured a Member that he was exercising "the greatest caution" in the setting up of Trade Boards "in the present difficult circumstances." It is to be hoped that the Minister realises that there are very "difficult circumstances" also in the present situation of industrial workers, and "caution" is there also needed. Meantime the official staff of investigators has been considerably reduced, and in September 1921 the Minister of Labour appointed a committee to inquire into the working of Trade Boards.

No doubt rising costs of production at home, and the difficulties which the results of war and the nature of the Peace settlement have placed in the way of foreign trade, are giving some manufacturers a great deal of trouble, and the reduction of wages of the weaker classes of workers may be regarded as the simplest expedient for easing the transition. But it is also a disastrous and extravagant one, as it tends to lower the efficiency not only of the women workers themselves, but of the next generation. The difficulties of the present time, which are being used as an argument against the system of Trade Boards regulation, in reality form a powerful argument for not leaving wages to be settled by caprice of the moment. The more complex the relevant considerations, the more necessary it is to have a representative authority to whom they can be referred and by whom the adjustment of wages can be effected after hearing both sides. In the absence of such an authority the weak position of workers can be taken advantage of to lower the standard irretrievably.

It is not, of course, intended here to imply that Trade Boards or the administration thereof should be exempt from criticism. No doubt mistakes have been and are being made: it seems likely that some determinations are too elaborate, go into too much detail, and thus add to the practical difficulty of enforcing the decisions. It is also arguable, I think, that the Trade Board can be most useful if it restricts its sphere to fixing flat rates to prevent sweating, and leaves it to the Trade Union action to determine the differential rates for organised workers of superior skill and experience. But these are matters of detail. The institution itself is one of tried and proved value. Numbers of weak and unorganised workers have been rescued from the extreme of poverty; industries regulated by Trade Boards have fewer strikes and labour troubles than have others; and, as Mr. Henry

Clay pointed out in *The Times* (September 26, 1921), at the present time, when unemployment is rife, these industries have a percentage of unemployment which is well below the average.

It is an interesting set-off to the attacks that have been made, that those Trade Boards which have the longest experience have recently passed unanimous resolutions (including, of course, the employers' representatives) recording their conviction that the operations of Trade Boards have been of advantage and benefit to all concerned, whether employer or employed, and adding an expression of appreciation of the appointed members' services. Regret in at least one case was expressed that an attempt should have been organised to cast discredit on the system.

III. It is at least possible that reduction in women's wages can be avoided or minimised by economies in other directions. I may perhaps mention here that I do not propose to discuss such matters as the reopening of trade, the reconstruction of European finance and so on. I am warmly in sympathy with the efforts that are being made in these directions, and can believe that they will, or may be, more successful than anything I have to suggest. But they involve large questions of world politics which cannot properly be discussed in the present article, and my aim is to bring out certain points nearer at hand and of immediate practical interest, which seem to me important for readers of this JOURNAL to consider.

The first point relates to the need for improved efficiency in management. The Commission that reported on the coal industry two years ago was, as we all remember, so impressed by the inefficient conduct of the industry that it recommended the most drastic changes in and renovation of the whole system. Dr. Vernon also, reporting to the Industrial Fatigue Research Board on Fatigue and Efficiency in the Iron and Steel Industry, several times refers to the defects in management which keep production lower than need be. Sometimes men are kept waiting for lack of material, sometimes for lack of steam pressure. The loss through such delays and enforced waiting was considerably greater in some works than in others, showing that much of it must be preventable (p. 62). In one case a striking increase of output was obtained, together with a reduction of week-end hours, largely, it is supposed, through a careful study of the causes of delay and taking means to avoid stoppages. Dr. Vernon in this connection attributes great importance to the system of charting delays and output regularly every week,

and thinks it tends to stimulate alertness. But he has to add that charts are very seldom made systematically, and he saw them only in two of the works he visited (pp. 64, 65). In each branch there are "tremendous variations" in the efficiency of the plant employed in different works and in the efficiency with which human labour is utilised. "It takes four to eight times more men to charge blast furnaces by hand than by machine; . . . Coupled with the difference of mechanical efficiency we find that the fatigue of the worker often varies in inverse relation." Dr. Vernon estimated that if all the iron and steel works in the country adopted the most efficient methods, they could on an average improve their output by something between 50 and 100 per cent. In other words, they could enable their employees to earn more in eight-hour shifts than they had previously done in twelve-hour shifts" (p. 95).

Strictly speaking, perhaps the above instances are not altogether relevant, as coal-mining employs no women and iron and steel very few. But a corresponding state of things is noticed in industries in which women are employed. Mr. Elton's Report [1] on Silk-weaving notes that many of our silk-mills are out of date, both as regards structure and lay-out. Much weaving is done in rooms with low ceilings and bad natural lighting. Production, it is shown in the same report, falls off during periods of artificial lighting, and the lighting question is important in a degree which unfortunately is still not recognised by employers. "Every hour," Mr. Elton states (p. 14), "of artificial light which could be avoided by means of increased window area or otherwise, means to the employer loss of production, [and] it means to the worker a reduced wage for performing a more difficult task." Again, the lay-out of old works causes loss of time through inconvenient arrangements, long distances between rooms in which allied processes are carried on, and time is lost through neglect to make such arrangements as will keep machinery continuously running and prevent the unemployment or partial employment of the worker while waiting for material, by neglect to detect and remedy faults in the machinery, or by giving unskilled work to weavers and so compelling them to leave their proper work (p. 15). Mr. Elton here points out that whereas time lost by workers is easily measured, measurement of the time lost by employers is hardly practicable. Consequently the ordinary newspaper-reading public, not familiar with industry, is likely to assign all the blame to the former, and to be quite unaware

[1] Industrial Research Board, *Textile Series*, No. 3, 1920.

of the wide variations in output due to differences in efficiency of management.

Dr. Myers also has referred to defects in management in a recent work (*Mind and Work*, p. 111). Restriction of output by the employer, he says, may be either deliberate or unconscious. Unconscious restriction may occur through bad organisation and out-of-date equipment; deficient training of employees, ill-considered arrangements of working hours, inadequate rest pauses, defective selection of workers, etc. Again, the Report on Profiteering in the furniture trade shows that the amount of timber wasted varies greatly from firm to firm. In one firm it was as much as 50 per cent., but after a careful study of the costs and comparison with other trades it appeared that not more than 15 to 30 per cent. was really necessary and inevitable. In the Report on the Biscuit Trade it transpired that the costs varied greatly from firm to firm, while the selling price was uniform. It would appear that the trade in these circumstances could bear some increase of wages. Taken together, the observations of these independent authorities certainly suggest that there is room for reducing cost of production without trenching on wages.

The personal efficiency of workers can also be improved through bettering the environment. Given time for the change to take effect, the productivity of industry can undoubtedly be increased in this way. A great deal has been written on this subject, but its importance is still imperfectly appreciated. Thus, in a Report on the Causes and Conditions of Lost Time,[1] Professor Loveday emphasised the opinion that sickness as a factor of lost time is under-estimated, and slackness over-estimated. If ill-health of workers spells economic loss to employers, healthy conditions and sufficient rest must be financially important. In an aeroplane factory in London the manager did not believe in long hours, and refused to allow them even in the pressure of war-time. The output was maintained with remarkable steadiness, and not one breakdown occurred among the women workers.[2] Mr. Kahn's book (*Design and Construction of Industrial Buildings*) may be referred to for a particularly vigorous and forceful statement, from the business point of view, of the case for improving industrial conditions. It will be remembered also how markedly the industrial efficiency of women improved under the influence of the better pay and conditions given during the War, especially in munition work and engineering.

[1] Cmd. 8511, p. 51, 1917. [2] *Industrial Fatigue*, by Lord Henry Bentinck, p. 23.

IV. In the short run, however, as we have already noted, the difficulties of the present time are great in the case of many firms, who have to pay higher wages and to meet greatly increased costs in respect not only of materials, but of repairs, re-building, and equipment. The great means of economy is through combination, which avoids much waste through competition and multiplication of staffs. The danger of combination is monopoly, the anti-social aspect of which can be studied in the Report on Trusts and in a more recent report on a certain industry (numbered as Cmd. 1200). Whether even monopoly is quite so dangerous to the position of the worker *quâ* worker, as the other extreme of unregulated competition, may be doubted. The point of present interest is, however, whether it is possible to take advantage of the undoubted economies secured by combination, and therewith to develop some form of co-operation for public service. Such an experiment has been made in the Building Guilds, but these, though extremely interesting and important, affect an industry which employs no women, and are not here relevant. An effort, however, has been made in an industry employing a large amount of female labour, described in the Report on Pottery, prepared by a sub-committee under the Profiteering Acts.[1] The Pottery Trade, it appears, prior to the War was suffering acutely from competition, cutting of prices, and the effects of the American tariff, which hit the export trade very hard. In 1913 the American Government reduced the tariff from 60 to 40 per cent., and the American manufacturers complained. The American Government then appointed a commission to investigate cost of production, first in the States, then in Europe. The result showed that the cost of labour was greater in the States than in England, but the cost of materials was less, and the net earnings of the trade were 10·6 in the States, as against 5·9 in England, per cent. of net value of product. The English manufacturers, beset by competition at home and abroad, fighting for their existence, had concentrated their attention on lowering costs, with the result that wages were brought very low. This state of things compelled both employer and employed to consider organisation, and the War, as the Report puts it, brought them together and assisted in this direction. The employers in the various stages of production have formed organisations controlling 60 per cent. of the trade. The sub-committee reported that profits and prices were reasonable, but considered that steps ought to be taken to safeguard the public in the future.

[1] Cmd. 1360. 1921, 2*d*.

A novel feature is that a National Council has been set up, including both employers and employed,[1] which differs from other Councils in that the employers have undertaken to disclose average profits on turnover and the average wages, "the underlying principle being that both employers and employed shall know the real facts relating to the industry." It is further laid down in the report of this organisation (which is summarised as an appendix to the Report on Pottery) that "power is needed to compel all firms to observe common rules and standard conditions laid down by the representatives of the industry." "This claim is made, not with the idea of abolishing competition and obtaining monopoly, but of restricting competition and diverting it from price to quality, and from socially undesirable practices, such as beating down wages, to socially desirable methods, such as the improving equipment and organisation."

On this plan membership of their respective organisations would be compulsory both on employers and employed. It is further suggested that earnings could be increased by bringing up the organisation of all factories to the level of the best, whilst the operatives, if their confidence were enlisted, could often contribute suggestions of value, and could be relied on to secure the increased output which better organisation would make possible. It is also suggested that the Government should revise its policy in the matter of contracts, and instead of opposing every sort of agreement among manufacturers as to prices, should require evidence that the price fixed is justified by costs. The State might also co-operate with the National Council of an organised industry for the promotion of research into economic conditions, the health and mortality statistics of the industry, experiments in processes and materials, and the improvements of industrial hygiene.

V. Briefly to summarise the foregoing paper: It is desirable to avoid a reversion to the under-payment and "sweated" wages of former years, and so far the Trade Board is the best means known to history for securing reasonable rates of pay to the worker in unorganised or ill-organised trades, and for protecting the good employer from the unfair competition of the worse. It appears from evidence given that the productivity of the industry is often retarded through waste and inefficiency in management, and it seems certain that it could be increased by better methods, therewith increasing the amount available for wages. Where it may appear that economies by individuals

[1] This was previous to the Whitley Report.

are not practicable to an extent sufficient to meet the difficulties of increased costs, and at the same time to maintain wages at a reasonable level, this would point to the need for experiments in some form of industrial organisation such as the scheme described in the Report on Pottery (or on any better lines that can be devised), with due safeguards to protect the interests of the consuming public. Among such safeguards the publicity advocated in the scheme itself would be an important item.

B. L. HUTCHINS

THE LAND SETTLEMENT OF RUSSIA

In 1861 the Tsar Alexander II abolished serfdom. The peasants, now independent, obtained the greater part of the land-owners' estates, and were admitted into the Zemstvos, the local self-governing bodies designed to deal chiefly with economic affairs.

It is important to remember, however, that the land was given to the peasants not as their private, but as their communal property, and that it was distributed amongst individuals by the commune according to the then size of their families. But as both the total population of any commune and the size of particular families within it varied with time, it therefore became necessary, if equal distribution was to be maintained, to redivide the land at intervals. These redivisions usually took place once every twelve years.

Now whatever may be the theoretical value of the idea of equality on which the commune was based, its realisation had a very bad effect on farming in Russia. Missing the assurance of permanent possession of his land the peasant missed also the incentive to put the maximum of work into it. He just scratched the surface of it, and would never consider any cultures requiring many years to mature, lest the fruits of his labour should fall to some one else. It is true he possessed as private property the land where his home stood, but this was too small to do much with, usually consisting of less than an acre. Further, the principle of equality demanded that each peasant should have his fair share of good and bad soil and of land near to and distant from the village. It thus followed that each peasant's fields were scattered about broadcast. Their number varied generally between eight and fifteen, sometimes it rose to twenty, forty, or even more. These fields were appropriately called "strips," and some of them were so narrow that a plough could not be turned round in one without encroaching upon another, belonging to a neighbour.

The commune nearly always had some indivisible lands, such

as " natural pastures " (stretches subject to inundation and unfit for cultivation), forest, marsh, and so on: their productivity was extremely low. Apart from these, the peasant farm in European Russia averaged 19 acres; in the north it averaged 25, in Central Russia 15, and in the south and south-east 30. In the most important agricultural districts, those south of the parallel of Moscow, the communes were fairly large, containing generally over 100 households each.

Before going further the reader must lay on one side his ideas of farming to-day in Western Europe, and imagine conditions entirely different but somewhat similar to those that prevailed in England or France three hundred years ago. Only in this way will he be able to make for himself a rough picture of rural Russia in the twentieth century. All buildings were of wood; immense spaces of land lay untouched by man's hand; only the most primitive implements were in use—up to the advent of the Revolution one-third of the peasants did not know of the plough even, and made use instead of the *soha*, a crooked wooden stick, with a sharp iron end; ninety per cent. of the population were illiterate; cattle and horses were about midway in size between mastiffs and shorthorns; winters were long and bitter, and during several months absolutely all work was stopped by deep snow or by the subsequent spring thaws which turned every village into an island. But above all let the reader imagine the distances.

Indeed, the first great disadvantage of communal farming in Russia was—*distance*. Take an ordinary case. Suppose that a village consisted of one hundred households, that each household held twenty-five acres in twelve strips scattered symmetrically over the whole communal estate, and that the indivisible land amounted to as much again; this would make altogether 5000 acres. Suppose also for simplicity and to take the most ideal situation that the whole estate was a square and that the farmhouse of a particular peasant lay exactly in the middle of it. A little rough arithmetic gives the sum of the distances between the farmhouse and the strips belonging to it. Thus:—

4 strips distant	·4 miles each	= 1·6 miles.
4 strips distant	·8 miles each	= 3·2 miles.
4 strips distant	1·2 miles each	= 4·8 miles.
Total . . .		9·6 miles.

In other words, simply to put his foot on each of his strips the peasant had to cover, there and back, over nineteen miles, a

day's journey. The amount of work thus wasted was colossal. Practically it resulted in this: only the nearest strips were cultivated more or less properly (according to the peasants' standard of cultivation); the farther the strip, the less work was put into it, and the farthest away of all were often left untouched—there was no time for them.

The second disadvantage of the communal system was *forced uniformity of farming*. Nearly everywhere the peasants followed the primitive triple rotation of crops—winter corn, summer corn, fallow. If this was followed by the commune it was practically impossible for an individual peasant to deviate from it. If he did so, his work would not coincide with that of his neighbours; he therefore would not be able to avail himself of their help; and one can easily understand that mutual help in the conditions of communal farming had quite a special value. Further, owing to the unclean state of the fields stubble was mostly used for pasture; if therefore a peasant attempted to grow something in a strip lying in the middle of other people's stubble fields, either his crop would be trampled down by the cattle, or else he would have to surround each of his strips with a ring fence—a thing quite impossible, of course.

The communal system was aptly described by a Russian statesman, in military metaphor, as "dressing by the worst." The peasant produced only a small part of what could have been extracted from the soil; his welfare depended not on his own energy, but on physical conditions, or, as he put it, on "God's will." He was content if what he sowed (by hand) returned him, say, fifteen to eighteen bushels per acre; he thanked God when in the fertile south or south-east the soil yielded forty-five or even sixty bushels; and he spoke of sins and punishment when the next year the crop fell to twelve bushels. It was just this feeling of personal helplessness and not alcohol or the much exaggerated malignity of the Government that was the greatest curse of the Russian peasant farming and the main cause of its backwardness. To the peasants shut up in their village, thirty miles from the railway and as much from the town, the commune was for all practical purposes the universe; they called it "Mir," meaning world, and to thwart the will of the world is not an easy thing.

Progress was not possible unless by first clearing the commune out of the way. This was a truth simple enough. But it was not understood either by the Government or by the Zemstvos until quite recent years. It is true, that after 1890 the Zemstvos began to attempt the improvement of the peasant farming,

supplying the peasants with better seeds and better implements, furnishing them with credit—on a very small scale—and sending to them technical instructors. But the success of these measures was only superficial : they merely tinkered at the evil. The peasant perhaps planted some fruit trees, or sowed some clover on his private plot of land, or grew oats from seeds imported from Sweden. But at the same time he still maintained the old triple rotation of crops; his plough, though now of a better make, was still useless to him for his distant strips; the influence of the thoroughbred bulls which the Zemstvos bought in England was annulled by the haphazard cross breeding that took place in the communal herd.

Strange to say, it was the retrograde Russian Government which took the correct view of the situation. The first Russian Revolution of 1905–6 made the Government hasten into the agrarian reform. It was considered then that by developing the sense of private property the formless and unstable mass of the peasantry would be stiffened into a strong conservative class which would prevent the repetition of revolutionary troubles. The agrarian law was drafted in 1906 by the Prime Minister Stolypin, one of the few capable statesmen of Russia. This law admitted two standard forms of land settlement. The first was the exit of single farmers from the commune; the second was partition, or the passing of the whole commune from communal to individual ownership; for such partition a two-third's majority of the peasants in the commune was sufficient. The new farm might be a *houtor* or an *otroub*. In the *houtor* all the land is in one piece; in the *otroub* all the arable land is in one piece but separated from the farmhouse. This latter type was obviously imperfect, but it was inevitable. The peasants lived in villages close together; the villages were usually large; out of one hundred peasants, say ten only would obtain land immediately adjoining the ground where their homes stood, the other ninety would have to put up with lands more distant. Now, to transfer nine-tenths of rural Russia to new places was a problem which of course could not be solved all at once. It was reckoned that the *otroubs* would later on become converted into *houtors*, through the peasants leaving their old houses and building new ones on their main lands. In practice there were about seven times as many *otroubs* as there were *houtors*.

Roughly speaking, twenty million farms had to be settled—a colossal task considering the area involved, the legal complications to be circumvented, and, most of all, the inertia of the

peasantry. The task was not made easier by the Zemstvos. Their attitude to the reform was chilly, partly for academic reasons, and partly for political. They regretted the sacrifice of the principle of communal ownership which they considered to be better suited to the Russian peasant than private ownership, and they suspected a reform hallmarked by the Government. On the other hand, the Government—or rather the talented Minister of Agriculture, Krivoshein, who succeeded in pursuing unhindered his own line of policy—did everything possible to enlist public opinion. In the days of unbridled bureaucracy Krivoshein took great pains to fill up the Land Settlement Commissions with unofficial elements, with men who knew the local conditions and who were in touch both with the Zemstvos and with peasants—a task, by the way, extremely difficult in the atmosphere of growing enmity between the Government and the general public. (Quite recently the same Krivoshein as Prime Minister of General Wrangel distributed the landowners' estates between the peasants of the Crimea.)

The work of settlement began about 1907. The first two or three years were the period of setting examples and of propaganda; the work progressed slowly. The chief hindrance was to be found in the peasantry themselves. "Our forefathers lived in the commune—why should we leave it?"—that was the stereotyped reply that the settlement workers had to hear from every mouth. On one occasion an official was declared to be "the son of Antichrist," and was promised appropriate treatment. To persuade the peasants that *old* is not necessarily *good*, a sum of efforts was required which only those can appreciate who know the force of passive resistance peculiar to the illiterate Russian. However, the work went on. Gradually it increased in volume; some Zemstvos announced their sympathies with it; the resistance of the peasants grew weaker. In the first year only a few thousand settlements were made; five years later their number rose to 200,000 a year; in 1914 it had reached 400,000 a year. By 1916, owing to the War, and the consequent depletion of staffs, the pace of the reform had to be slackened; at that time the number of *houtors* and *otroubs* was about 2,200,000. It was believed that by 1925–30 the commune would be extinct.

Soon after the first settlements it became clear that the formation of *houtors* and *otroubs* was not the end of the reform but only Act One. The peasants, freed from the commune, secured only the material conditions of progress, but had no

means whereby to enact it. All they knew was the routine of farming as practised in the commune; even if they were taught what to do they would not be able to do it, as their capital amounted practically to zero. The outstanding task was to organise technical assistance for the new settlers. This should have been done by the Zemstvos, but once again politics intervened, and the Zemstvos stood aloof from the new settlers—"creatures of the bureaucracy." Again, it was the Ministry of Krivoshein that took the initiative, trying later on to induce the Zemstvos to share the work.

Help in the form of agricultural instruction began in 1910. The first step was to form a staff of instructors—*agronomers*, as they were called. By 1914 the Government had about 1500 of them.

Their duties consisted of: (1) Lecturing; (2) Organisation of show farms and show fields, where improved methods of farming were demonstrated, not in the artificial conditions of an experimental field, but in the natural conditions of a genuine peasant farm, the farmer in such circumstances being usually given a loan ranging from £1 to £12, not more; (3) Organisation of depots of improved implements; the implements were temporarily lent to the peasants for a nominal fee; (4) Organisation of breeding stations. All credit operations were left with the Zemstvos.

About 1913 a special staff was formed to introduce new methods of housing. The peasants' buildings were all wooden with roofs of thatch; a fire once started often consumed the whole village. It was necessary to replace wood with cement or bricks. This work, however, had no time to develop.

With time those Zemstvos which were more progressive and less affected by politics joined the Government in this work, and indeed in some districts the two organisations were blended into one. By 1915 about three-fifths of the staffs formed by the Government had been taken over by Zemstvos. The liberal tendency of Krivoshein was much appreciated by the Douma; as a matter of fact he and his successor, the equally capable Rittich, were the only two ministers who enjoyed the confidence of the Douma at the time of the most furious attacks on the bureaucracy.

The Western reader should not overrate the results of this work. There were, indeed, several thousands of instructors; but their pupils numbered twenty millions, and consisted of men ignorant, and stubborn in their ignorance. The instructor had

to spend hours and hours talking—and cursing too—before he could induce some Ivan or Semyon to sow just ten square yards of clover or swedes; he had to call on the same Ivan or Semyon perhaps ten times before he would agree to change the rotation of crops. The instructor's district might be of the size of several English counties; he had to get about it as best as he could —without roads. The Government and the Zemstvos spent about 100 million roubles a year on settlement and technical help; this seemed a fairly large sum of money, but divided among 20 million peasants it was a drop in the ocean. Still, it could not be otherwise. The country was poor, the educated classes formed not more than 2 per cent. of the population; practically all men with any scientific knowledge of agriculture were enlisted in the service of Zemstvos or the Government. What was done, inadequate as it was, was near the maximum possible under given conditions.

The Western Press is now showing a tendency to overrate the influence of the co-operatives in Russia. The growth of the co-operatives in the twentieth century was certainly very fast, and their membership by the time of the Revolution reached a great figure. But most of them were concerned with trade and credit operations only; as regards the improvement of the methods of farming their work was very small, infinitely less than that of the Government or the Zemstvos; it was rather training than work. So, *e. g.*, by 1915 there were less than ten co-operatives (I knew them all by name then, but have forgotten now) which had a technical adviser paid out of their own funds—a fact most significant, inasmuch as one of the very first needs of the villages was indisputably to increase the productivity of the soil. The actual influence of the co-operatives was small; but there was a spirit in them which showed great potentialities for development. From many officials, both of the Government and the Zemstvos, I have heard that, given time, the co-operatives would be able to take the foremost place in the economic affairs of the country; while in the Ministry of Krivoshein opinions were expressed that in a score of years or so they might take over the whole agricultural work of the Government and the Zemstvos.

The results of the combined efforts of the Government, the Zemstvos, and to a small degree of the co-operatives, soon became apparent. It was not that they could or did increase the wealth of Russia or the amount of the grain export. Their chief value lay in demonstrating the truth that individual property is more advantageous than communal, that land given in perpetuity to

the peasant yields much more than the same land minced up into insignificant strips and constantly changing hands.

As told above, the Zemstvos before the reform granted some technical help to the communes. But all they did attain were some partial improvements which did not affect the whole system of farming, and made the increase of crops hardly noticeable. On the contrary, in the *houtors* and *otroubs* the progress became palpable in various branches of farming at once. I remember an excursion which I made in the late spring of 1913 to a district near Kherson, where a group of one hundred *otroubs* had been formed about three years earlier. This district had quite a different appearance from the surrounding communal districts. There only scattered sowing was used—by hand or by means of a primitive drill; here the corn stood in orderly rows. The rotation of crops was fivefold instead of three; most of the farms had near them a piece of land covered with the characteristic green of the lucerne, a plant very seldom to be seen in the commune. The kitchen gardens were a good deal larger than in the communes. It is true the cattle of the settlers did not look any better than in the communal herds; but the books of the breeding stations showed that the settlers brought their cows much more often than the peasants of the commune, although the station was some three miles away, and actually in the centre of a large commune. The loss of the common pasture grounds was quite compensated by such food as lucerne and swedes.

The main result of the reform, however, was not the 25 per cent. or 40 per cent. increase in productivity, but the psychological change in the farmer. The writer remembers hundreds of reports from, and interviews with, Government and Zemstvos workers, enthusiastically maintaining that the peasantry was at last moving from the dead centre. "The peasant has wakened from his slumber"—that was the burden of these reports. For every once that a peasant of the commune applied to the depots for implements, seed, or bulls, the new settler applied several times; he did not wait for the instructor to visit him, but himself asked the commission to send "somebody" to teach him. I heard of instances when the settler, impatient at the non-arrival of the instructor, started himself to introduce some new system of farming which he had read of in a pamphlet or seen at a landowner's estate. He did it all wrong, perhaps, but in this very intention of his he manifested a spirit of enterprise that was absolutely unknown in the commune.

There were failures, of course, especially in the poorer districts,

as, for instance, in Central Russia, where many *houtors* had only twelve or ten acres of mediocre land. An inexperienced official sometimes allotted land which had either no water or a deal too much of it. But these were occasional failures. The figures of the reports and still more the enthusiasm of the new settlers proved that the reform as a whole was a great success, that the power of assimilating culture, at zero in a peasant of the commune, rose suddenly as soon as he was withdrawn from its drowsy influence. I think it was near Kharkoff that a settler asked me to transmit to the Czar " his humblest thanks for the reform that enabled him to become a man." " If you are a man now, what, then, are those who stay in the commune ? " I asked. He made a gesture of despondency. " Oh, idiots," he said. Peasant farming, the very backbone of Russia, came to sudden life after centuries of stagnation. In ten or fifteen years the whole economic aspect of the Empire would have been changed.

But the fates willed otherwise. Bolshevism, as applied to rural Russia, has completely undone the reform. Particulars are not available, for Russia is behind a smoke screen; but from many refugees I gather that since 1918 the lands of the *houtors* and *otroubs* have been again incorporated into the communes and redivided into strips. Their owners have either obtained their old share of strips or—" been disposed of " : they were proclaimed as bourgeois and—the rest may be easily guessed. All the technical culture that had been introduced into peasant farming soon perished in the frenzy of wholesale destruction; the thoroughbred bulls were shot for the fun of it by hooligan youths calling themselves Red Guards, Communists and the like; machinery was broken up; depots plundered; fruit gardens cut down.

Then came the starvation in the towns. Battalions were sent into the country to " collect " grain. Cattle were slaughtered for beef. Owing to the breakdown of industry and of trade not merely ploughs but axes and even ordinary nails became rare. A traveller passing through Russia to-day would find not the least trace of the immense work done for the peasant by the Zemstvos and by the progressive—the only progressive—department of the old Government.

As to the future one thing only is certain. The larger estates which the peasants have seized will remain in their hands. That, however, will not in the least modify the necessity of starting all over again the agrarian reform, and on the same lines as before, namely, division of communal land into individual holdings and technical assistance to the farmer. The ravages of the

Revolution will probably make the execution of the reform easier in two respects. From sheer reaction against communism the peasant may conceive a strong desire for private ownership. Besides, the hardships of the Revolution may strengthen in him the spirit of co-operation, thus enabling him to take in future a larger share in the management of his own affairs than he did before. This certainly is necessary. Even in the days of peace the educated classes were too few to provide a sufficient number of *agronomers*, settlement officials and bookkeepers for the co-operatives. Now the *intelligenzia* has been half exterminated, and it is for the peasants to fill the gaps. Whether they are able to do it, whether they can govern themselves, nobody dare predict. Russia is a country of the unexpected, even for the Russians.

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BANK RATE AND THE MONEY-MARKET IN THE UNITED STATES

BANKING reform in the United States centred for long on proper control of the note issue. It was not till after the crisis of 1907 that the primary importance of issues of bank-credit was fully realised.[1] The Federal Reserve Act of 1913 aimed at securing control of credit issues by an adaptation of the central banking system existing in various forms in Europe to the particular conditions prevailing in America. In Europe control is exercised mainly through the discount rate of the central bank in each country; a rise in this, when effective, produces a general rise in market rates, and this checks borrowing. The Federal Reserve Banks are expected to exert a similar control.[2] Efforts to prevent over-expansion of credit after the war were accompanied by much discussion as to how far this time-honoured device of raising the discount rate really secured the end desired, and the conclusion both in this country and in America seems to have been that it must, under existing conditions, be accompanied by other measures if credit was to be really restricted. This paper, however, is concerned not with the general question of how far a rise in market rates will limit credit-issues, but with the smaller problem of the effectiveness of the machinery provided under the Federal Reserve Act for securing such a rise. The system has not been working long enough for an appeal to experience to be very helpful; it was not in complete working order till 1917, and for the next three years the market was dominated by war-needs and Government finance. From the beginning of 1920 a policy of regulating credit was begun,[3] but conditions

[1] Cf. Laughlin, *Banking Progress*, ch. ii.

[2] Cf. *Report of the Federal Reserve Board*, 1914, p. 17. Cf. also "Address by P. M. Warburg," printed *Federal Reserve Bulletin*, 1916, p. 102: "The aim of the system must therefore be to keep this gigantic structure of loans and investments both from over-contracting as well as from over-expanding," and A. C. Miller, *American Economic Review*, June 1921, p. 179: "The regulation of the flow and volume of credit being in the last analysis the primary function of the Federal Reserve Banks."

[3] Cf. A. C. Miller, *American Economic Review*, June 1921, p. 190: "With the year 1920 the Federal Reserve Banks entered upon the exercise of their function of regulating credit in accordance with business and economic indications and under circumstances of extraordinary difficulty, and for the first time since the outbreak of the War, undertook to develop a policy of credit control by means of discount-rates."

were still abnormal, and in any case a year and a half is too short a time on which to base definite conclusions. The method here adopted must therefore be an analysis of the machinery for regulation provided by the system with a view to making some estimate of its probable efficiency.

I

With regard to the function of increasing the supply of credit little need here be said. The capacity of the system to do this adequately depends on its controlling a sufficient quantity of resources in relation to the demands likely to be made upon it. The resources at its disposal have steadily increased since it was first instituted.[1] As a result of steps taken in 1917 to centralise the gold supply, most of the gold in the country is now in the possession of the Federal Reserve Banks.[2] It may be confidently affirmed that they are in a position to meet all seasonal increases in demand. With regard to such extreme demands as have arisen on exceptional occasions in the past, it is one of the objects of the new system to prevent such violent crises from arising, but even in the case of a panic there can be little doubt that it would be able materially to ease the situation.

The problem of securing a contraction of credit-issues or of preventing over-expansion is more difficult, and the machinery devoted to that end more complicated. The Federal Reserve Bank rate is intended to be used in the same way as European bank rates. We may now proceed to examine how it is designed to work and how far it is " effective " in the sense of controlling market-rates.

1. In the first place a word or two may be said as to the rate itself. There is in the Federal Reserve system no " official rate " as in England. The rate, or rather rates published by each Federal Reserve Bank are the actual rates at which they do business. Under the Act, the initiative in fixing rates rests with the banks subject to the approval of the Federal Reserve Board. In practice the determination of rates has been in the hands of the Board, the Banks simply accepting its suggestions. There is, further, no one set of rates for the whole country, local conditions determining them in each district, though the shifting

[1] The total resources of the Federal Reserve Banks on May 25, 1921 = $5,379,760,000.

[2] Cf. *Federal Reserve Bulletin*, 1917, p. 98.

of funds by means of re-discounting between Federal Reserve Banks has done much to secure uniformity.

To be " effective " a rise in the Federal Reserve rate must be closely followed by a rise in the market rate. The machinery of the Federal Reserve Act is designed to secure such a correspondence. A brief description of this machinery may perhaps be given here. The reserves of all the banks belonging to the system must not be less than a certain legal fixed ratio to their demand deposits. Reserves to this amount must be kept at the Federal Reserve Banks. When the limit has been reached fresh deposits can only be taken when reserves are increased. Short of new gold deposits this can only be done by discounting with the Federal Reserve Banks such paper as they are allowed under the Act to discount. These re-discounts when placed to the credit of the discounting bank with the Federal Reserve Bank count as legal reserve, and fresh credit can be issued on that basis. The rate charged by the member bank for these issues will be determined by the rate which it has paid to the Federal Reserve Bank. In this way the rate at which Federal Reserve Banks re-discount affects the rate charged by member banks for discounting paper in the open market.

2. (*a*) Such is the connection established under the Act. The question now is, How does it work? In the first place there is the general difficulty of the lack of an organised discount market in the States. This has been due in the past mainly to absence of commercial paper suitable for discounting and, especially in New York, to the competition of the Stock Market for the available money. While on the one hand high call-loan rates may lead to a diversion of funds from the discount to the speculative market, high Federal Reserve rates, on the other, may have a similar effect. Bankers, knowing that commercial paper could only be re-discounted at a high rate, would tend to give up discounting and invest in call-loans instead.[1] The result might be a check to the issue of commercial credit but an undesirable inflation of speculative credit—a proceeding which has been responsible for many of the New York money-market's difficulties in the past. Special steps are, however, being taken to develop the discount market by encouraging the use of forms of commercial paper suitable for re-discount purposes. In especial

[1] Cf. H. P. Willis, *Magazine of Wall Street*, May 28, 1921, p. 84: " Interior banks have preferred . . . to cut their re-discount obligations rather than to keep them up, and to use the funds held in consequence either in stock-market loans or advances on ineligible paper."

the use of bankers' acceptances and the growth of the acceptance business is aimed at.[1] The use of dollar exchange in foreign trade would have a similar effect. The competition of the call loan-market remains, however, formidable, particularly in New York.[2]

(*b*) Apart from this question of the development of the market, the influence of the Federal Reserve rate will clearly depend on the extent to which banks do in fact re-discount, and this will depend on the relation of their reserves to their deposits. When the ratio between them approaches the legal ratio, money will be tight and market rates rise. When it is reached, further loans can only be made at a rate governed by the Federal Reserve rate. As in England, there are certain seasons in the year when the demand for money regularly increases, the ratio of reserves to deposits decreases, and the Federal Reserve Banks come automatically into control of the market.[3] The periods of greatest demand are from mid-February to early April, from August 1st to October 1st, and the end of December. In addition to these, the collection of taxes at the end of each quarter produces a temporary withdrawal of funds from the market. It was intended that with the abolition of the Independent Treasury system, the Federal Reserve Banks should hold the Government deposits, and with this arrangement in force, these funds would be removed from the market until they were returned by the recipients of Government disbursements. But during the War, Government funds were deposited with all qualified national banks, and the total quantity so held is no less now than in 1914.[4] Under these conditions, funds are

[1] Cf. *Report of the Federal Reserve Board*, 1921, pp. 50, 382. Total acceptance liabilities of all member banks :—

Sept. 2, 1915	$ 13,000,000
June 20, 1917	158,000,000
May 4, 1920	674,000,000
April 28, 1921	504,000,000
June 30, 1921	432,000,000

The drop between 1920 and 1921 is ascribed by many to the shrinkage in trade, not to any disinclination to use acceptances. Cf. *Federal Reserve Bulletin*, 1921, pp. 776, 1052.

[2] Cf. *Federal Reserve Bulletin*, 1920, p. 370; Moulton, *Financial Organisation*, p. 645.

[3] Cf. for this section Kemmerer, *Seasonal Variations*, National Monetary Commission Reports; Moulton, *Financial Organisation*, ch. xxiii.; *Federal Reserve Bulletin*, 1921, p. 777; *Report of the Federal Reserve Board*, 1919.

[4] The total quantity of Government funds held outside the Federal Reserve Banks and their branches amounted in June 1920 to $313,997,973. Of this sum $8,608,654 were deposited abroad.

returned to the market almost as soon as withdrawn. These deposits, it may be remarked, need not be kept within the legal ratio to reserves.

The next most important condition affecting the relation of the member banks to the Federal Reserve Banks is the normal size of their reserve. If it is habitually larger than the legal requirement, they will not tend to re-discount paper much, and the rate which they charge in the market will be little affected by the Federal Reserve rate. Further, if the ratio of reserve to deposits which bankers consider safe is above the legal ratio, they will tend to resort to the Federal Reserve Banks before the legal ratio is reached; if, on the other hand, their estimate is below this, they will be willing to expand their loans freely as long as that is legally possible. It follows that figures of excess reserves held are only really significant in relation to the reserve ratio habitually held. Conditions as regards reserves have been so abnormal since the Federal Reserve system came into operation, that little can be said as to the ratio which bankers in general consider safe at the present time. It has been estimated that the ratio of all demand deposits to money before the War never exceeded 8·1 per cent,[1] and the general tendency is probably rather towards a too liberal than a too conservative estimate of the proper size of the credit structure relatively to its foundation.

Large imports of gold such as occurred in 1916 and have been occurring recently will tend to lessen the effectiveness of the Reserve rate. Thus the Board supported the removal of the embargo on gold exports in 1919 in the hope that the depletion of gold reserves would give them some control over the market.[2] Where bank-rate is raised with the object of preventing an export of gold, as it used to be in England before the War, this state of affairs would not matter much. In America, where the rate is mainly needed as a check on the undue expansion of credit for speculative purposes, an expansion which is particularly likely to occur when gold reserves are increasing, the loosening of the connection with the Federal Reserve rate at such a time is likely to be especially dangerous.

The situation as regards reserves may be summed up as follows: if the banks know that they may shortly want to increase their reserves by re-discounting, they will tend to charge their customers a rate higher than the Federal Reserve rate;

[1] Sprague, "Discount Policy of Federal Reserve Banks," *American Economic Review*, March 1921.

[2] Cf. A. C. Miller, *American Economic Review*, June 1921, p. 182.

otherwise, there will be a strong tendency to charge a lower one. The real condition of reserves may not be obvious at first sight, partly because, as already pointed out, the bankers' minimum may be different from the legal minimum, partly because reserves above the legal ratio may not be kept at the Federal Reserve Banks, but elsewhere. At present the greater part of the gold in the country is in their hands, but there seems no particular reason why this should always be so.

(*c*) In the next place, the control of the Federal Reserve Banks is weakened by the fact that not all the banks in the country are in the system. In June 1920 the aggregate resources of all the member banks = $32,194,301,000, making 70 per cent. of the total banking resources of the country; the remaining 30 per cent. held by non-member banks amounted to $13,829,370,000.[1] The existence of banks outside the system lessens control over the discount rate in two ways. In the first place, non-member banks are not bound by the legal minimum reserve, and can therefore expand credit to any extent that they see fit. Secondly, Federal Reserve notes which do not count as legal reserve for member banks can be used by non-member banks for reserve purposes. The system thus increases their power to extend credit without exercising any corresponding check on them.

(*d*) This brings us to a further peculiarity of American banking which makes the bank rate there less directly effective than it is in Europe. Increased loans from the Bank of England, for instance, mostly go directly to swell the available funds in the money-market. Increased re-discounts by the Federal Reserve Banks are generally used to increase reserves on which further loans are based. It follows that though re-discounting will oblige a member bank to raise the rate at which it makes its own loans, this rise will only be proportionate to the rate at which it has itself borrowed and not equal to or above it.[2] A rise in the Federal Reserve rate will have to be very high in order to produce a moderate rise in the market-rate, the exact relation between the two depending on the amount of fresh loan credit which the bank bases on its borrowed reserve. The official theory now appears to be that the Federal Reserve rate will be so high that resort will only be had to it in times of pressure.[3] It has been found in practice, however, that Federal Reserve resources have been used as a basis for profitable operations by

[1] *Report of the Federal Reserve Board*, 1920.
[2] Cf. Reed, *Journal of Political Economy*, January 1921.
[3] *Report of the Federal Reserve Board*, 1919, pp. 2, 67.

member banks.[1] An Act was passed in April 1920 providing for the application of extra high rates at Federal Reserve Banks to specially heavy borrowers.[2]

(*e*) In England, the connection, not by itself a very close one, between the bank rate and the market rate is made closer by the fact that the banks adjust their deposit rates in relation to movements in the bank rate. This adjustment is purely the result of custom. In 1918 a similar link was established between bank-deposit rates and the Federal Reserve rates. Competition between banks for deposits appeared likely to push up the interest allowed on them; following on a letter from the Governor of the Federal Reserve Board in February, pointing out the inconvenience of a general rise in rates at that time, an agreement was made between the clearing-house banks of New York in March to fix the maximum rate for deposits in relation to the New York Federal Reserve Banks' rate on 90-day commercial paper.[3] In July the Chicago banks adopted the same system, and further efforts to fix deposit rates were made in August. In 1920, however, the Board itself objected to this arrangement as hampering it in fixing discount rates,[4] and on January 16, after a meeting of bankers held at Washington to discuss the question, the New York Clearing House Association fixed a maximum rate for deposits of $2\frac{1}{4}$ per cent., and similar action was recommended at Chicago.[5] Any such link is therefore for the present non-existent.

There is one connection between the market and Reserve Banks which may be expected to become more important as time goes on. In England a rise in the bank rate acts mainly through its effect on the bill-brokers who are obliged, when money is short, to borrow their working capital from the Bank of England, and who fix their discount-rates to correspond. The American money-market is less specialised, and the part played by separate discounting institutions smaller, but traces of a similar process

[1] *Federal Reserve Bulletin*, 1918, p. 1169; 1920, p. 558.

[2] Cf. *Report of the Federal Reserve Board*, 1920, p. 2.

[3] The exact arrangement was an advance of $\frac{1}{4}$ of 1 per cent. in interest rate for every advance of $\frac{1}{2}$ of 1 per cent. in the Reserve Banks' rate up to a maximum of 3 per cent. in the interest rate. Cf. *Federal Reserve Bulletin*, 1918, p. 252.

[4] *Federal Reserve Bulletin*, 1920, p. 3: "The Board wishes to be free to approve such discount-rates as conditions may make necessary or desirable, but it is anxious at the same time to avoid a disturbance of the whole banking system such as would most likely result from an advance in the interest rates allowed on out-of-town balances."

[5] For this paragraph cf. *Federal Reserve Bulletin*, 1918, pp. 160, 252, 806; 1920, p. 117.

have been observed there. The advance in rates in 1920 had, according to the *Federal Reserve Bulletin* (1920, p. 345), "an unexpected effect" in shortening loans from commercial paper-brokers. As the discount-market develops the rôle of paper-broking is likely to become more important and the effect of their operations on the market greater. This would provide a direct link between the market rate and the Federal Reserve rate, and its sensitiveness to changes in the latter would then be correspondingly greater.

On the whole, however, it appears that the direct connection is only an uncertain one. As Professor Willis says, "the rate itself has only a minor influence upon current market rates except when it is considered as part of a broad general policy." [1] Its failure was demonstrated during the period May 1920–May 1921. "It has, of course, been obvious that the high rates which have been charged in some quarters have not been due to the policy of the Federal Reserve Banks, particularly as such high rates have frequently been asked by institutions which were in no way dependent on Federal Reserve Banks for accommodation, while, on the other hand, not a few which have been largely accommodated have seen fit in some cases to continue their old rates to customers, who were thus carried at a charge which was distinctly less than that of the Federal Reserve Banks themselves." [2] Steps will therefore have, as a rule, to be taken to make a rise in the Reserve rate effective.

II

When the Bank of England ceased to be the principal discounter of bills in the London money-market, and special measures had to be taken to make its rate effective, it was on operations in the open market that it chiefly relied. Provision was made for enabling the Federal Reserve Banks to reinforce the raising of their rates in a similar way. "It was the intention of the Federal Reserve Act," says Professor Willis, "to provide a means whereby the banks could make their rates effective." [3] Under the Act they are empowered to buy and sell gold, United States paper, cable transfers, bankers' acceptances, and such commercial paper as is eligible for re-discount. Such transactions enable them to affect market rates directly, giving them control not only

[1] H. P. Willis, *Magazine of Wall Street*, May 28, 1921, p. 84.
[2] *Federal Reserve Bulletin*, July 1921, p. 775.
[3] H. P. Willis, *American Banking*, p. 325.

over member banks, but over non-member banks as well. This is indeed sometimes regarded as the chief means by which control is to be exerted. "If this function (of carrying on open-market transactions) were not . . . exercised, the making of the discount rate effective would be entirely dependent upon the extent to which member banks chose to obtain re-discounts from the Federal Reserve Banks. With the power on the part of the Federal Reserve Banks to go into the open market, the control of the prevailing interest rate is always in the hands of the Federal Reserve Banks if they have a substantial amount of loan funds at their disposal." [1] The extent of their power depends on how large a quantity of resources they can employ in such transactions. The following tables show the resources at different dates of the Federal Reserve Banks and of all other banks in the United States, and the relative resources of Federal Reserve and member banks at different centres in April 1921.

TABLE I.

Total Resources.

(In thousands of dollars.)

	Federal Reserve Banks.	*All other Banks.*
	$	$
June 1916	624,000	27,804,000
„ 1917	2,053,000	32,271,000
„ 1918	3,872,000	40,726,000
„ 1919	5,288,000	47,615,000
„ 1920	6,074,000	53,079,000

TABLE II.

Total Resources (April, 1921).

	1. *Federal Reserve Banks.*	2. *All member banks in the district.*	3. *Percentage of 1 to 2.*
	$	$	
Boston	447,449	2,078,561	21·5
New York	1,621,855	8,884,855	18
Chicago	835,909	4,292,887	19
Dallas	143,102	924,979	15
San Francisco	417,398	2,357,517	18

Their power in this direction is to some extent checked by the limitation on the kinds of paper they may buy, and on the amount of acceptances which any one bank may hold. In this

[1] H. P. Willis, *American Banking*, p. 171. Cf. also "Address by Mr. P. M. Warburg," printed *Federal Reserve Bulletin*, 1916, p. 102. "In order effectively to develop their operations, Federal Reserve Banks cannot depend upon the borrowing requirements of their member banks alone, . . . the first year's experience has already shown that they must look largely to open market operations . . . in order to secure their share of business and influence."

connection the development of the acceptance business is particularly important, since bankers' acceptances are specially suitable for their operations.[1]

These open-market transactions enable the Federal Reserve Banks to control rates by increasing or lessening their sales and purchases as occasion may demand.[2] By buying less or selling their holdings at low prices they will tend to raise market-rates. They will be most active in the market at times when money is tight and it is desirable to increase loanable funds. But if this is to be successful, the banks must be continually carrying on business in the buying and selling of paper in normal times,[3] and this is not compatible with the theory referred to on page 67, that the Federal Reserve rates should as a rule be higher than market rates.[4]

It has been suggested that another possible method of control lies in the regulation of the note-issue.[5] If the amount of fiduciary notes is limited, the demand for other kinds of cash will be increased. This will tend to deplete the legal reserves of the banks and so force them to increase their re-discounts or to limit their loans. In practice raising Reserve rates has been accompanied by direct suggestion and exhortation on the part of the Board and by the adoption of "rationing" credit, attempted discrimination between essential and non-essential loans and special high rates for heavy borrowers.[6]

The following chart shows the movement of discount and call rates in the New York market, together with the discount rate of the New York Federal Reserve Bank from November 1914 to June 1921.

The history of the rates is briefly as follows:—During the period November 1914 to November 1916 the reserves of the banks were very large, and the legal reserve requirement had just

[1] Cf. Warburg, *Federal Reserve Bulletin*, 1916, p. 102: "Their most important field in this respect is the banker's acceptance." For the development of the acceptance market, cf. the table given on p. 66.

[2] Warburg, *Federal Reserve Bulletin*, 1916, p. 102.

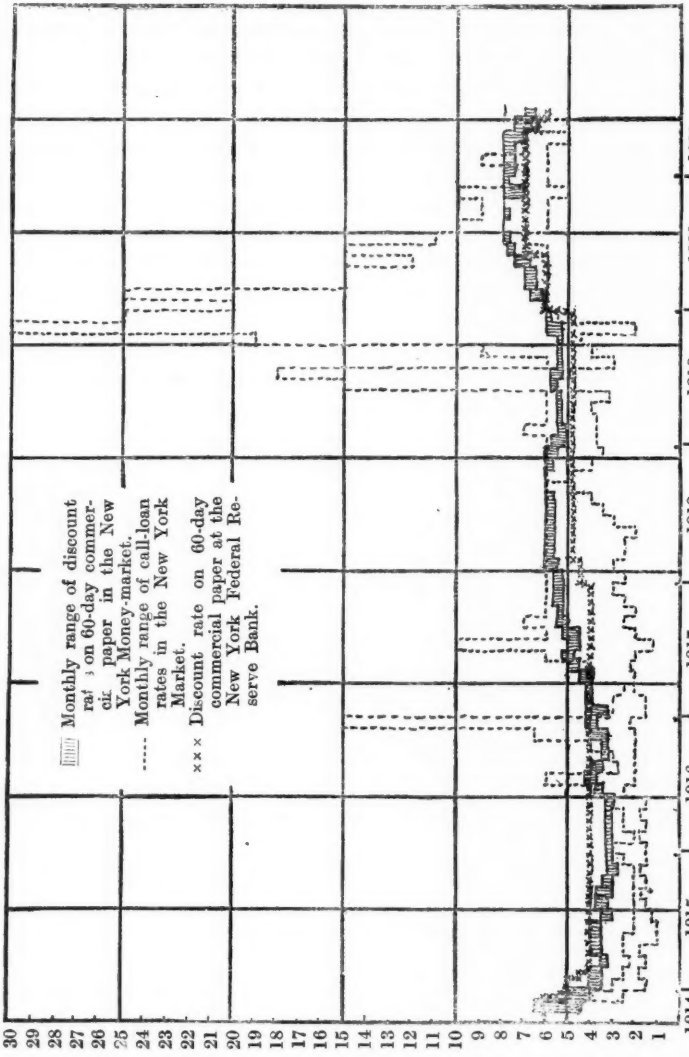
[3] Cf. *Report of the Federal Reserve Board*, 1914, p. 18: "To influence the market, a Reserve Bank must always be in the market."

[4] Cf. *Federal Reserve Bulletin*, 1917, p. 76: "In view of the fact that the rate for bankers' acceptances recently maintained by the Federal Reserve Banks has been somewhat higher than the open-market rate, the holdings of acceptances by the Federal Reserve Banks have been materially reduced during the past weeks."

[5] A. C. Miller, "Federal Reserve Policy," *American Economic Review*, June 1921.

[6] Cf. *Federal Reserve Bulletin*, 1918, p. 1169; 1920, pp. 118, 456, 558; *Report of the Federal Reserve Board*, 1920; 1921, p. 58.

been lowered; the full legal reserves had not yet been entirely transferred to the Federal Reserve Banks; consequently there was


Monthly range of discount rates on 60-day commercial paper in the New York Money-market.
Monthly range of call-loan rates in the New York Market.
Discount rate on 60-day commercial paper at the New York Federal Reserve Bank.
1914
1915
1916
1917
1918
1919
1920
1921

little re-discounting, market rates were low and the Federal Reserve rate had practically no influence. By the end of 1916 the process of transferring reserves was completed, and the immense demand for capital pushed market rates up to the

Federal Reserve rate. During the period when the United States were in the War, the financial policy pursued was to keep the Federal Reserve rate low in order to enable the banks to discount Government paper cheaply. This state of affairs continued during 1919. In January 1920 and again in June, the Federal Reserve rate was raised, but in both cases the rise in market rates preceded it.[1] It cannot be said that changes in the Federal Reserve rate have so far done anything in the way of anticipating or hurrying on a change in market rates.[2]

A table of the re-discount and open-market operations of the New York Federal Reserve Bank and of all the Federal Reserve Banks 1920–21 is appended.

TABLE III.

	New York Federal Reserve Bank.		*All Federal Reserve Banks.*	
	Bills discounted.	Bills and Treasury Certificates bought.	Bills rediscounted.	Bills and Treasury Certificates bought.
	(In thousands of dollars.)		(In thousands of dollars.)	
1920.				
January	3,454,051	309,283	7,290,872	1,043,084
February	3,798,319	274,220	6,517,439	604,604
March	3,755,960	818,365	6,970,331	1,796,746
April	3,165,858	847,754	6,229,740	1,244,647
May	3,181,044	194,884	6,135,984	42,996,739
June	3,425,123	923,338	6,336,642	1,461,197
July	4,044,470	498,538	6,714,924	803,983
August	3,091,647	189,010	7,982,524	284,028
September	4,412,393	781,693	7,298,969	1,147,295
October	4,914,286	221,943	7,548,456	464,759
November	5,088,376	296,005	7,882,933	830,976
December	6,207,902	623,723	9,461,658	1,176,322
1921				
January	5,565,144	224,738	8,257,762	396,440
February	5,631,398	60,835	8,120,849	188,335
March	4,271,628	359,667	7,368,268	597,742
April	2,469,906	98,331	4,912,652	171,476

III

Apart from the actual machinery provided under the Act, there are certain other conditions affecting the situation which may be grouped together here.

[1] Cf. *Report of the Federal Reserve Board*, 1921, p. 381.

[2] Cf. W. P. G. Harding in the *Federal Reserve Bulletin* for August 1921, p. 895 *sqq.*

For one thing, bank reserves in America are not so sensitive to changes in credit as they were, for instance, in England before the War.[1] The system of fiduciary note issue is such that an expansion of credit is less directly followed by a depletion of reserves than here. The disorganised state of international trade has, at the present time, the same effect, and in any case, unless New York develops a large international short-loan business, the effect on reserves through foreign Exchange channels will always be less immediate than in London. Scientific opinion in the United States is moving towards the adoption of some other criterion than the reserve ratios for regulating credit, such as the movement of prices,[2] but the business public are still actuated by a belief in the old test. It follows that it may be difficult to secure support for a general rise in discount rates unless the reserve ratio is visibly affected, even though credit conditions may make it advisable. In the next place, opposition to a rise in Reserve Bank rates may be more strongly roused than in England owing to the fact that here it affects first, and most directly, the bill-brokers, who are less powerful and organised than the banks. In America, where re-discounting by the banks is much more frequent, the impact falls directly on them and will be more immediately felt. Further, there is considerable suspicion of the Federal Reserve Banks as being in some way backed by the State, and jealousy of their competition might make extensive market operations difficult. On the other hand, as the success of the system and the real advantages resulting from it become more and more recognised, it is acquiring a prestige which will give to its advice and to its actions an influence making such difficulties as have been considered much less important.

The problem of securing effective control over market rates is more complicated than it is in England, and it is at a different stage of development. Here the device of raising the bank rate worked best when the Bank of England was the largest institution in the market, and the other banks were small and not very numerous. The difficulty now is that the bank is confronted by a very few, very powerful banks. In America, on the other hand, the attempt at central control has to face a very large number of banks over an immensely diversified area, some large and powerful, others small and inefficient. Organised co-

[1] Cf. A. C. Miller, *American Economic Review*, June 1921, pp. 192–196; *Federal Reserve Bulletin*, 1919, p. 911.

[2] Cf. Sprague, "Discount Policy of the Federal Reserve Banks," *American Economic Review*, March 1921. Also Reed, "The Work of the Federal Reserve Board," *Journal of Political Economy*, Jan. 1921.

operation between the central authorities and the other banks, which is one solution for the English situation, is, for good or ill, much more difficult to secure in the latter case. As regards existing arrangements, the Federal Reserve rate by itself is not likely to be effective at all times. The use of operations in the open market to enforce it has not yet reached full development, but with the growth in the resources of the Federal Reserve Banks, and with increased organisation of the discount market, these will become more important, and it is on them that chief reliance will probably be placed in the future.

J. E. NORTON

REVIEWS

Political Economy Club founded in London, 1821. (Centenary Volume: Macmillan & Co., Ltd. 21*s*. net.)

THE history of this famous club, it has been observed, may be said to be the history of Political Economy since 1821, at all events in England; and it therefore fully deserves the record which Mr. Henry Higgs has compiled with conspicuous success as a centenary volume. No fitter historiographer indeed could have been chosen by the club, but the materials at his disposal, beyond the lists of members and of subjects discussed, were not too abundant; the most diligent inquiries instituted many years since have failed to reveal any account of the discussions except those contained in two diaries and a few scattered allusions; nothing beyond formal minutes have ever been kept by the Secretaries; and it has proved difficult to elicit so much as had been hoped in the way of written recollections from the older members. The two diaries referred to, however, those of Mr. J. L. Mallet, an original member, and Mr. Prevost cover pretty fully between them twenty or thirty of the earlier years of the club's history; reminiscences of great interest have been contributed by Mr. Stebbing, now the *doyen* of the club, and by the late Lord Courtney, who had carried on its traditions from the days of John Stuart Mill. He was for fifty years a frequent attendant at the dinners, and his few pages of appreciation of members like Newmarch, Bagehot, Cairnes, Cliffe-Leslie, Jevons, Lord Bramwell, Lord Addington, Lord Avebury, Henry Grenfell, Thring, Farrer, and Giffen are only less valuable than the paper left by the late Sir John Macdonell. By much search in published biographies, Mr. Higgs has disinterred many allusions to the club's activities by members such as J. B. Say, Nassau Senior, Lord Overstone, and Sir Charles Dilke; and his own introduction and concluding remarks not only tell us all there is to be known about the conduct and constitution of the club since its foundation, but also give us the impressions of a well-qualified observer—tinged by regrets, which some who have witnessed the really remarkable revival of vitality in the

discussions of the club during the last twenty years will hardly share, for the "antique air" and more academic and subdued discussions (accompanied by early Victorian cooking) of earlier days!

How little after all remains of the variety of talk, argument and discussion which has taken place at the 700 dinners of the last hundred years—talk and argument which has helped to make history by forming the opinions of three or four generations of the leading men among publicists and writers on economics, statesmen and civil servants, and banking and industrial magnates! But there is wisdom in the rule precluding the reporting of speeches which would have hampered discussion without adding to the sum of knowledge; and enough remains to enable the reader to trace the various phases through which political economy has passed in the last hundred years. Sir John Macdonell has with this object given us an able and acute analysis of the questions propounded, and divided the life of the club into three periods, 1821–1846, which he describes variously as the age of principles or dogma or the age of *laissez-faire*, dominated by James Mill, Ricardo, Malthus, Tooke and McCulloch; the second, 1846–1871, a period of transition in which questions of the relation of employers to workmen, of capital to labour, of strikes, hours of labour, and trades unionism were just beginning to assume some prominence, and in which John Mill, Chadwick, Thornton, Lowe, Senior, took a large part in discussion; and the third, from 1871 to our own days. On this last period Sir John unfortunately touched but lightly, and it would perhaps be impossible, however interesting, to sum up its discriminating marks in a few phrases. He hints, however, that the tendency to select "comparatively small questions and incidents of the day" as the basis of discussion is due to timidity, and to loss of faith in principles. The period is undoubtedly marked by greater modesty; but no one who has followed at all closely the discussions of the last twenty years will be likely to attribute to the leading protagonists any absence of conviction in dealing with fundamentals, though certain "principles" may have suffered shipwreck in the controversies of the last century. Whether bimetallism, or free trade, or Government finance, or some issue involving socialist theory in one of its protean forms were in question, there seemed to be plenty of convinced thought in the speaking. It is true that, though, as Sir John Macdonell most justly notes, the door has always been kept open for "heretics," and has always welcomed them and given them fair

play, the club has not of late or perhaps at any period attracted as members men who could be described as advanced or revolutionary thinkers; but this very fact seems to show that more continuity in its views has been maintained than Sir John Macdonell's description of his third period (which, however, is perhaps meant to apply rather to the science than to the club) as one of "socialism without doctrines," or of "pacific anarchy," would indicate. It is no bad thing that principles and ideas which may be unfashionable on public platforms or in the House of Commons, should still find expression in a club which remains, what it has been for a hundred years, a "common meeting ground of theorists and practical men."

BERNARD MALLET

Prices and Wages in the United Kingdom, 1914–1920. By ARTHUR L. BOWLEY, Sc.D. ("Economic and Social History of the World War"). (Oxford: Clarendon Press, 1921. Pp. xx + 228. Price 10*s.* 6*d.* net.

THE division of Economics and History of the Carnegie Endowment for International Peace has planned an "Economic and Social History of the World War," and the present monograph by Dr. Bowley is among the first of the series arranged by the British editorial board. Its subject is the movement of prices and rates of wages in the United Kingdom from the outbreak of war in 1914 down to about the middle of 1920, the latter date, as it happens, marking the culmination of the upward movement characteristic of the period.

The data are for the most part derived from official records already published, and Dr. Bowley, as we should expect, presents them with admirable skill. The result is a highly valuable epitome, critical and appreciative, of the facts about prices and wages during the war period, so far as they have been made public.

Prices and wages are, of course, pre-eminently subject to treatment by the method of Index Numbers, and Dr. Bowley has a good deal of criticism to offer of the validity, under war conditions, of the well-known Index Numbers of prices and the Cost of Living. He considers that "the ordinary methods of measurement of prices are not valid in times of catastrophic change," and become "almost meaningless" (p. xviii) when prices are controlled and supplies are short and rationed, because

in such circumstances the commodities affected cease to be subject to the ordinary laws governing "value in exchange." Again, the general condition that the items comprised in an Index Number should be of constant or uniform quality and character was unfulfilled during the war, for some articles (*e. g.* beet sugar) practically disappeared, and the quality of others (*e. g.* flour) varied. Further, when prices are violently fluctuating, the weights assigned to the various items in an Index Number become of much more importance than when price oscillations are (as in normal times) fairly moderate. The larger the number of independent items entering into the Index Number, the less will be the effect produced by the abnormal influences affecting some of the items, but neither the "Economist" nor the "Statist" Index Number has a sufficiently wide basis to withstand the shock of war disturbances. The Board of Trade Index Number of wholesale prices has escaped some of the difficulties befalling the other two numbers, but Dr. Bowley thinks that it was not sensitive enough to price changes in 1918 and 1919. All three Index Numbers, however, agree very closely down to some date in 1918. They then diverge, and the subsequent course of prices becomes indefinite. But the divergence arises mainly from differences in weighting.

The critical examination of the basis of the various Index Numbers in common use is a useful feature of the book, and it is worth noting that, on the whole, the Index Numbers do not suffer much from it. The only doubt we have is whether Dr. Bowley does not over-rate the effect produced by the price-controls during the war. In some cases, prices were fixed high enough to exhaust the demand. Higher prices could have been obtained, but smaller quantities would have been consumed, with resultant disturbance of the "weights." The prices of all goods were not controlled, and there was a great deal of substitution of uncontrolled for controlled articles, leading to higher prices for the former. So far as the prices of the uncontrolled articles entered into the Index Numbers, they would go some way towards counteracting the artificially low prices of controlled articles. It is true there were not many important articles the prices of which were not controlled! But if Index Numbers are to be invalidated because prices are not determined by the free play of supply and demand, what becomes of any of our Index Numbers in these days of trusts and combinations?

The more important results of Dr. Bowley's study may be briefly summarised. The table below contains figures showing the course

of wholesale and retail prices. There was a rapid rise during the first three years of the war, but this was checked during the next two years, when the control of prices by the Government was in full operation. From about the middle of 1919, after the removal of many of the controls, prices again increased rapidly. In the second quarter of 1920 wholesale prices in general reached their maximum, but retail prices continued rising until the last quarter of that year, and finally turned at a lower maximum than wholesale prices. Dr. Bowley makes the generalisation that for the three years beginning September 1914 there was nearly an uniform rise in retail food prices of 1·7 per cent. per month, and in wholesale prices a monthly rise of about 2 per cent. In some months there were rather wide deviations from these percentages, but on the whole the closeness to an uniform rise is remarkable.

Dr. Bowley has many criticisms of the Labour Ministry's "Cost of Living" Index Number. In particular, he states that too little importance is given to margarine, and, in the later years of the war, too much weight attaches to sugar, butter, eggs and cheese. It is also suggested that the official figures for the cost of clothing considerably exaggerate the actual rise, at least down to 1918. This leads Dr. Bowley to construct a modified Index Number, which indicates a smaller rise than the official number. Both Index Numbers (together with price and wage Index Numbers) are given in the following table for certain dates.

Year.	Retail Food Prices (*Labour Gazette*). (June 30 or July 1.)	Wholesale prices ("Statist")		"Cost of living."		Wage-rates for a normal week (Bowley). (July.)
		Food (second quarter).	General (end of June).	*Labour Gazette* (July).	Bowley (July).	
1914	100	100	100	100	100	100
1915	132	144	129	125	120	105 to 110
1916	161	173	159	145	135	115 „ 120
1917	204	233	218	180	160	135 „ 140
1918	210	227	233	205	180	175 „ 180
1919	209	233	242	210	185	210 „ 215
1920	258	328	310	252	220	260

The "Cost of Living" numbers include food, rent, clothing, fuel and light, and sundries. Dr. Bowley does not claim superior reliability for his own number, but he suggests that it indicates that the official number is too high. A large part (in some cases more than half) of the difference between the two numbers arises from Dr. Bowley's assumption that the increase in the cost of

clothing has been only half that calculated for the official number. The latter has, however, just received practical confirmation in the recent Labour and Trade Union inquiry into the Cost of Living,[1] so that we may say that the weight of evidence is against Dr. Bowley. Perhaps, as Dr. Bowley himself hints, the truth lies between the two Index Numbers!

As regards wages, there was little change in *rates* (although earnings substantially improved) during the first few months of war, but in 1915 a general upward movement began, followed later by the grant of war bonuses. Dr. Bowley's Index Number for rates of wages for a normal week (given above) is based on a miscellaneous collection of data, difficult to handle, and his own conclusion is that "so far as a general statement can be made, we may say that *rates* of wages for the same work increased less rapidly than the cost of living in the first three years of the war, in the fourth year wages gained and their increase over four years was nearly that of the modified index (*i. e.* his own index). In 1918–19 wages gained rapidly and reached the official cost of living measurement, and they kept pace with it in the year 1919–20" (p. 106). *Earnings*, however, in numerous cases increased more rapidly than prices from 1914 to the Armistice (p. xix). The investigations show a diminution of the margin between the wages of skilled and unskilled labour, and a levelling up of district wages, probably resulting, as Dr. Bowley suggests, in a position of economic instability. Dr. Bowley is unable, from the data available, to compute the effect of the changes on the aggregate wages-bill of the country, nor can he decide whether, on the average, real wages have risen or fallen.

The following few mistakes and printers' errors may be noted. On p. 34 the figure for margarine in the last column should be 57·9, and the total of the column 2329·2; the Sugar Commission did not raise the price of sugar in August 1914 to $3\frac{3}{4}d.$ (p. 53), but lowered it to that figure from a higher one caused by panic-buying; glucose and saccharin were widely used as substitutes for sugar (pp. 58 and 73); in the table on p. 73 the quantity for sugar in the fourth column should be 3·05 lb.

Dr. Bowley has done a very valuable piece of work, and if the companion volumes of the series are as well done and as informative, the series will be indispensable to all who take an interest in the social and economic history of this country.

A. D. WEBB

[1] *Final Report on the Cost of Living.* George Allen and Unwin, Ltd., 1921.

The Fruits of Victory: A Sequel to "The Great Illusion." By NORMAN ANGELL. (London: W. Collins Sons & Co., Ltd. Pp. xviii. + 338.)

IT would be unjust to Mr. Angell, and would only serve to foster a misunderstanding from which he has suffered more than enough already, to treat his last work as solely or even primarily an essay in economics. Few writers have elucidated more clearly the true nature of the connection between economic and spiritual things; nor has he himself ever put the matter better than in two pregnant sentences of this book. "This does not mean that economic considerations should dominate life, but rather the contrary—that those considerations will dominate it if the economic truth is neglected. A people that starves is a people thinking only of material things—food." "The real economic argument against war . . . consists in the fact that war, and still more the ideas out of which it arises, produce ultimately an unworkable society." Nevertheless, in Professor Cannan's phrase, there is a more and a less material side of human happiness; and it is with Mr. Angell's views on the former that this review must be chiefly concerned.

These views are developed for the most part in the first two chapters of the book, and in a way which seems to us to exhibit a great advance in strength of thought and exposition on Mr. Angell's earlier manner. If the stream is not always as limpid as that of *The Great Illusion*, it runs deeper and carries a heavier freight. Mr. Angell does not shirk the element of competition which mars and complicates those general relations of economic interdependence between nations which constitute his main theme. It is indeed necessary for him to stress this element of international competition in order to make good his case about the difficulty of exacting a huge war indemnity (a point on which he indulges in a legitimate crow over his orthodox critics of ten years ago); and he seems to recognise that having stressed it in one connection, he cannot very well ignore it in others. He is driven, therefore, to urge that the principle of economic co-operation between nations works sometimes in roundabout and unexpected fashion—that (to take the most important example) the fact that industrial Germany is the economic centre of Central Europe and Russia may render the reconstruction of German industry a British interest, even though her leading manufactures compete directly with our own. He is driven, too, to represent his old trump card, the complexity of the

structure of international credit, less as the crowning symbol of a world perfectly differentiated and adapted for economic co-operation than as a last desperate device for making the best of a bad job and keeping the Malthusian devil at bay.

Further, Mr. Angell finds himself compelled to recognise the increased importance of the State as an economic entity. A political frontier, whatever we may wish it to be, is no longer in fact an economic irrelevance running innocuously athwart the lines of individual trade. The modern State can and does aim directly at promoting the material welfare of its citizens and damaging that of foreigners by reserving to its citizens the right of access to raw materials and to markets and in similar ways. There is no doubt that the State Socialism of war and of reparation machinery have wrought a vast change in this respect: yet perhaps Mr. Angell overstates the case when he says that "the Allies have transformed what were, before the war, dangerous fallacies into monstrous truths." It seems likely that history will regard the war and the peace, on their economic side, rather as the climax of forty years of growing stress and clash of interests than as a cataclysmic reversal of a harmonious progress towards the obliteration of economic frontiers. And it is even possible that the pre-war prophets of economic nationalism, whether they counselled well or ill, at least read more correctly the signs of the times than those who sang over again the soothing songs of the golden 'sixties in a changed and overpeopled world.

Those who are conscious of laying a different emphasis from Mr. Angell on these matters will perhaps feel that he has imparted an unreal simplicity to the choice which faces the modern statesmen. What measures in the way of preference or subsidy, of protection of the interests of nationals abroad, above all of immigration laws, are justifiable, and what must be ruled out as foolish and provocative? Must we do *nothing* that might injure others—not even control coloured immigration into undeveloped territory? Yet such doubts and differences need not prevent us from endorsing Mr. Angell's main conclusion. The more real is the disharmony of interests between the members of different communities and the more prominent becomes the State in the rôle of trader and debt-collector, the darker, he reminds us, becomes the prospect before the human race unless the nations can learn to fix their attention also on the other side of the shield—on the avenue of escape which conscious and systematic co-operation offers from intolerable poverty and incessant conflict, and on the certainty that prolonged or recur-

rent war will destroy the material basis of civilisation. If the surrender of the weapons of economic nationalism involves risk, so does their brandishment. When all is said and all qualifications made, we come back finally to Mr. Angell's main thesis—that the real economic case against war and the policies that make for war is that they produce ultimately a society which will not work.

The rest of the book is in the main a telling indictment of war psychology, illustrated with an astonishing galaxy of relevant quotations, among which Sir Arthur Conan Doyle's prose hymn of hate, and the ecstatic *Times* leader of 1870 on the annexation of Alsace-Lorraine, seem particularly worthy of preservation. Mr. Angell makes effective use, so far as an ignoramus can judge, of the technical apparatus of modern psychology. Perhaps he is a little hard on the war-working duchesses (p. 161): some part of the heightened social sense which he attributes entirely to the instinct of hate might surely be attributed to the instinct of self-preservation—which is not quite the same thing. Perhaps, too, alongside the familiar tendency to rationalise our emotions he might have mentioned the somewhat worthier tendency to emotionalise our reasons—to stimulate our will-power by appropriate emotions to the difficult task of executing decisions arrived at originally on rational grounds.

As against the disappointed idealist, who believed that a "just war" might be waged blamelessly and give rise to a just peace, Mr. Angell seems to hold that the thing was not psychologically possible. "The most righteous war can only be kept going by falsehood. The end of that falsehood is that our mind collapses." "Our machinery [of propaganda] developed a psychology which made our higher political aims quite impossible of realisation." If this be so, the problem of personal and political conduct returns insistent and unsolved. Granted, as Mr. Angell seems to grant, that war may sometimes be rightly chosen as the lesser evil, where should be the limit of our acquiescence? At the collective murder of civilians? Or at collective lying, *alias* propaganda? Or at collective food-production for collective murderers and liars? One lays down Mr. Angell's work with the feeling that one would not know much better how to behave in the event of another war than in the last; but with the feeling, too, that he has written a thoughtful and fearless and moving book, a sincere and eloquent contribution to straight thinking and right feeling, which deserves many and

attentive readers, since from the unspeakable menace that overhangs mankind "there is no refuge but in truth."

D. H. ROBERTSON

Our Social Heritage. By GRAHAM WALLAS. (London: George Allen & Unwin, Ltd., 1921. Pp. 292. Price 2*s.* 6*d.*)

THIS valuable essay in reconstruction deals "with the ideas, habits, and institutions directly concerned in the political, economic, and social organisation" of modern communities. These are our social heritage, and the vital problem of to-day is how we can maintain and improve our inheritance.

Mr. Graham Wallas gives us his first definite conclusion in the fourth chapter, when he states "that no social organisation can be stable which is not supported by a larger measure of general consent than is now found in any great modern industrial community." And such consent could only be attained by a "much nearer approximation to economic and social equality than now exists in any industrial nation." Many expedients have been proposed to bring us nearer to such an equality, and Mr. Graham Wallas is of the opinion that with "a certain amount of patience and goodwill" we ought to be able to utilise these expedients, or invent others, which would enable us to secure our end without too much loss of national wealth. The only expedient which he examines, however, *i. e.* Guild Socialism, or any similar form of Vocational Society, he rejects after a searching analysis of its guiding principles and its inevitable tendencies.

The organisation of persons employed in a common occupation is not only inevitable, but in many ways socially valuable. It adds to the dignity and happiness of the individual, and makes for more competent performance of his duties. The difficulties begin when the organised worker—whether professional man or manual labourer—claims not only to influence his conditions, but to dictate them. When the workers begin to arrogate to themselves the exclusive right of demarcation of their functions, of fixing the terms of entry to and expulsion from their ranks, and the price at which their services shall be rendered to the community, we risk not only stagnation, but definite retrogression. The danger is increased when the vocational bodies as a whole make it their policy to support each other's claims.

In a very interesting chapter on "Professionalism," Mr. Graham Wallas examines the results, actual and potential, of

self-government in the Law, Medicine and Teaching. He selects the professions rather than the Trade Unions, because the aggressive attitude of the latter towards the capitalistic organisation of industry, and their avowed intention of undermining the existing system, are apt to confuse the question at issue. He finds, however, in the professions a sufficiently valuable object lesson. The elements common to all vocationalism are a universal shrinking from change of habit, a contemptuous intolerance of all ideas initiated by outsiders, and a glorification of the average, based on the conception of identity of work and reward. The most glaring example of conservatism, and of persistent obstruction of whatever might make for progress and increased service to the community, is afforded by the legal profession. The professional spirit of doctors is better than that of lawyers, for while law remains practically stationary, the science of medicine is transformed every decade. Nevertheless, we find among medical practitioners the same shrinking from the effort of rehabituation, the same distrust of outside influences, and a very similar attitude towards the question of internal reform. In the teaching profession organisation is a later growth, and the benefits derived from it naturally bulk large in the eyes of the newly organised. But the dangers of " the complete control " now claimed by the National Union of Teachers, would be even greater than in the Law or Medicine. We must be for ever on the watch to find gaps in our educational system, for ever on the alert for new discoveries and new methods, if our social heritage is to be improved. But teachers are as hostile to change as any other body of workers, and Mr. Graham Wallas is convinced that if change can only take place on the initiative of the majority of a body of professional teachers, it will not take place at all. Moreover the knowledge which the teacher hands down, is in the main the creation of others. The funds by means of which the profession carries on are supplied by taxation or endowments. The claim to complete control by members of the profession is therefore unjustifiable. It is essential in all vocations which have acquired social power, that the State should keep control of the internal vocational organisation, and in particular of the franchise regulations under which elections and referenda within the vocation take place. But this is precisely what the Guild Socialist, who, according to Mr. Graham Wallas, never allows sufficient weight to the historical fact of the failure of the medieval guild organisation, would be the last to concede.

While we have not yet evolved a satisfactory basis for our national life, we have not even made a beginning with inter-

national questions. Yet world co-operation is inevitable, if we would continue to exist in our present numbers. At the time of writing Mr. Graham Wallas was inclined to believe that the League of Nations would not long survive. If, however, it continues to exist, he thinks that "it may help in the invention of expedients and habits which will be useful if ever mankind come to desire a more effective organ of world co-operation."

There is a note of hope in the view that what the human mind has contrived, the human mind can alter. The statement is made with regard to that "almost insoluble problem of democracy"—the Press. But it indicates in a sentence the main lesson which this volume is intended to convey. By close, intelligent study of all conditions, including the psychological study of the character and impulses of men, by the application of reason and goodwill, and, above all, by means of serious intellectual effort, we may yet save civilisation, and hand on our social heritage. But the effort must be made, and no existing institution, neither the professions nor the politicians nor the scientists nor the Churches, has yet shown us how to make it.

H. REYNARD

A Treatise on Probability. By J. M. KEYNES. (Macmillan. Pp. 466. Price 18*s*. net.)

"THE terms certain and probable denote the various degrees of rational belief about a proposition which different amounts of knowledge authorise us to entertain" (p. 3). Thus, probability is an objective relation between one proposition or set of propositions and another set, and any statement that something is probable in a general way without reference to the evidence is elliptical. New evidence cannot alter any probability relation; it provides the basis for a *different* probability relation between the conclusion and the different data. Moreover, the fact that a conclusion "turns out to be wrong" is no evidence that, on the data available when it was formed, our judgment of probability was mistaken. This is the broad foundation upon which Mr. Keynes' very interesting and important work is built. Upon it one criticism, which does not affect the value of the superstructure, may be suggested. In identifying probability with the degree of belief which it is rational for us to entertain, the author is faced by a difficulty. Different people's logical powers are different, and it seems paradoxical to speak of its being rational for me to perceive something, which, from the constitu-

tion of my mind, it is impossible for me to perceive (p. 32). Would it not be better to say that there *is* a probability relation between proposition a and proposition h, whether or not my mind, or anybody else's, is such that it is rational for us to see it; and that though, of course, we can only *know* that the relation is there when we do see it, yet the fact of its being there and the fact of its being rational for us to see it are not one thing, but two?

It has been widely held, at least implicitly, that all probability relations are numerical, different relations containing, as it were, different numbers of units of probability. If this were so it would, of course, always be possible, as between any two known probabilities, to say, not merely that one is greater than the other, but also that it is so many times greater. Mr. Keynes argues with great force that many probabilities are not numerical at all. Two points are distinguished here. First, some probabilities can be placed in an order of magnitude without its being possible to *measure* the difference between them. On evidence h, a may be more probable than b, just as one shade of colour may be more like than another to a given shade, though it is not twice, or any other number of times, as like. The confusion of thought that is here unearthed is a very common one: for many people suppose that if one thing is prior in order of magnitude to another, the difference between them *must* be numerically measurable. I have seen it stated, for example, that a certain passage in the Alps is "25 per cent. more difficult than the Mummery crack on the Grépon"—a statement which reflection shows can have no meaning at all. Mr. Keynes' second point is subtler. It is that, though certain probabilities can be arranged in an order of magnitude, so that we may say "this probability is greater than that," others cannot. The probability of a on evidence h is always greater than, equal to or less than, the probability of a on evidence hh_1, and the same thing is true as between the probability of a on evidence h and the probability of ab on evidence h; but there need not be any such relation between the probability of a on evidence h and that of b on evidence k. Mr. Keynes illustrates his view on this point by means of an ingenious diagram (p. 39).

To ascertain the nature and the degree of the probability relation between any proposition or set of propositions and another set we must depend either on *seeing* it as a whole or on seeing separate parts of it and combining what is seen in accordance with logical rules. Thus, just as in mathematics,

analysis may make the task of intuition easier, but no analysis can dispense with it: and, just as in mathematics again, where a genius may safely jump the steps to a recondite conclusion, an ordinary man does best to take them one by one. An excellent example of this is furnished by the history of "the principle of non-sufficient reason," or, as Mr. Keynes prefers to call it, the "principle of indifference." When, at first glance, we seem to have no preponderant reason either for affirming some proposition or for denying it, in what conditions are we justified in asserting that, on the evidence available, the probability of the proposition is one-half? Is it equally likely, prior to any study of the details, that a coin tossed in the air will or will not fall heads; that the world is or is not the product of "design"; that the elasticity of the demand for a commodity about which we know nothing is or is not greater than unity: and so on? Mr. Keynes exhibits numerous paradoxes to which an uncritical use of the principle of indifference has led important writers and brings into light certain classes of relevant considerations that are in danger of being overlooked.

After having, in Part I of his book, elucidated the general notion of probability and the ultimate dependence of judgments of probability and of the relevance of evidence upon perception, Mr. Keynes proceeds in Part II to construct a symbolic logic of probable inference, by which the unwary may guard themselves against fallacy in attacking complicated problems where a number of elementary intuitions have to be combined. The most important part of this development is concerned with "independence for knowledge." Writing a/h for the probability of a on evidence h and ab/h for the probability of both a and b on evidence h, we have $ab/h = a/h \times b/ah$. This is equal to $a/h \times b/h$ if, and only if, the truth of a is irrelevant to the probability b. This requirement is *not* equivalent to the requirement that there shall be no direct causal connection between a and b. Thus, though the occurrence of a head at the first toss of a penny can, in no sense, be a cause of the occurrence of a head at the second toss, nevertheless, by modifying the evidence, it makes the probability of a head at the second toss different from the probability of a head at the first toss. "For the purposes of probability two facts are only independent if the existence of one is no *indication* of anything which might be a part cause of the other" (p. 165). This consideration, as Mr. Keynes shows, narrows very stringently the range over which Bernouilli's theorems may be legitimately applied. It forbids us, for example,

to argue, except under very special conditions, that, if on evidence h the probability of a given event occurring once is p, the probability of its occurring n times is p^n.

The most important types of argument dealing with probability are those which are based on the methods of induction and analogy. "In an inductive argument [in the wider sense which includes analogy] we start with a number of instances similar in some respects A B, dissimilar in others C. We pick out one or more respects A in which the instances are similar, we argue that some of the other respects B in which they are also similar are likely [either always, as in universal induction, or generally, as in inductive correlation,] to be associated with the characteristics A in other unnamed cases. The more comprehensive the essential characteristics A, the greater the variety amongst the non-essential characteristics C, and the less comprehensive the characteristics B which we seek to associate with A, the stronger is the likelihood or probability of the generalisation we seek to establish" (pp. 219–20). A mere addition to the number of instances in which A and B have gone together strengthens the argument, because, though there is no certainty that any of the new instances of association are linked with new circumstances, there is a chance, which is greater the greater the number of the new instances, that some of them are.

This sort of reasoning is embodied in an enormous number of actual scientific arguments. It must also be embodied, Mr. Keynes contends, in valid inferences from statistical correlations. Ultimately the step from observed to unobserved correlations between series is the same as that from observed to unobserved individual connections. "If B has invariably accompanied A in a hundred cases, we have all kinds of difficulties about the exact character of our evidence before we can found on this experience a valid generalisation. If B has accompanied A, not invariably, but only 50 times in the 100 cases, clearly we have just the same kind of difficulties to face, and more too, before we can announce a valid correlation" (p. 390). These difficulties can be partly overcome, on the lines of normal inductive processes, by "breaking up the statistical series, according to appropriate principles, into a number of sub-series, with a view to analysing and measuring, not merely the frequency of the given character over the aggregate series, but the *stability* of its frequency amongst the sub-series; that is to say, the series as a whole is divided up by some principle of classification into a

set of sub-series, and the *fluctuation* of the statistical frequency under examination between the various sub-series is then examined" (p. 392). Mr. Keynes develops this method in a very interesting way upon lines laid down by Lexis.

There remains the fundamental problem. It will be readily agreed that, as we come to know more and more respects in which B resembles A, whether B and A be individuals or series, the more probable it becomes, relatively to our knowledge, that B also resembles A in some, or all, other unexamined respects; and, in like manner, as we come to know more and more instances in which quality *b* is associated with quality *a*, the more probable it becomes that the two qualities are associated in some, or all, unexamined instances. But, in order that the reliance we do in fact place on arguments from induction and analogy may be justified, we require more than this. The probability of our inferences must not merely grow as favourable instances grow; these inferences, if they do not approximate to "practical certainty," must become at least substantially more likely than not. Mr. Keynes shows that this can only happen if, apart from the instances, there is some appreciable *initial* probability in favour of the inference which they tend to support. Sometimes we can see no such initial probability. We can see no initial probability, for example, that the name William is associated with blindness at 40; and, consequently, no amount of *a posteriori* evidence could create an appreciable final probability that unexamined Williams will meet with this misfortune more often than unexamined Johns. *Per contra* we *can* see an initial probability that men blind at 40 will also be blind at 41: and, in this case, *a posteriori* evidence will soon carry the final probability near to certainty. To justify the methods of induction and analogy as employed in the general body of science, we seem to require some finite probability (however small), obtained otherwise than by these methods, that, if A and B resemble one another in one respect X, they will also resemble one another in another respect Y, and that, if two qualities *a* and *b* are found together in one instance they will also be found together in the next. Mr. Keynes shows, in an original chapter, that the required probability would follow if we suppose the physical universe to constitute a system of which the *independent variety*, in a sense that he carefully explains, is finite. This supposition he calls the *inductive hypothesis*. It stands, he writes, "in a peculiar position, in that it seems to be neither a self-evident logical axiom nor an object of direct acquaintance; and yet it is just

as difficult, as though the inductive hypothesis were either of these, to remove from the organon of thought the inductive method, which can only be based on it or on something like it" (p. 364).

These ultimate speculations, going, as they do, to the root of the theory of knowledge, are not suitable for discussion in the pages of this JOURNAL. It is not, however, merely the fact that Mr. Keynes is a distinguished economist that warrants a review of his work here. For, though the philosophy of probability lies outside their field, students of economics have, perforce, to make frequent use of probable inference. This is so even in pure theory, when we lay it down, for example, that curves of demand and supply are likely to be continuous; when we assume, as we must do in certain problems of taxation, some definite relation between the elasticity of demand at a point, taken as known, and the elasticity at neighbouring points; or when we recognise, with Professor Edgworth, that certain problems of monopoly have a less secure solution than others, because, to treat them successfully, it is necessary to know the sign, not merely of the first, but also of the second, differential of the price-quantity function. In practical work, when we are endeavouring to disentangle causes and to foresee effects, particularly if statistical correlations form a part of our material, we are grappling even more directly with particular instances of the class of problems of which Mr. Keynes is seeking a general view. A study of that general view may be of high value in our narrower researches. For the problems which Mr. Keynes has touched he has not only illuminated with a marvellous lucidity of style, but has also substantially advanced. Economists will recognise with pride what one of their number has accomplished in another field, and will look forward with added zest to his next essay in their own.

A. C. PIGOU

The Taxation of Excess Profits in Great Britain; A study of the British Excess Profits Duty in relation to the problem of Excess Profits Taxation in the United States. A Report prepared for the Committee on War Finance of the American Economic Association by ROBERT MURRAY HAIG, Ph.D., assisted by GEORGE E. HOLMES of the New York Bar.

IN the spring of 1919 Dr. Haig was delegated by the War Finance Committee of the American Economic Association to

conduct an investigation into the Excess Profits Duty in this country, and to inquire particularly, first, into the way in which certain problems which had caused difficulty and dissatisfaction in America had been dealt with in British law and practice; secondly, into any points in which our administrative schemes might suggest improvements in their own; and thirdly, into the views of economists, officials and business men upon the economic effects of the special profits tax and its suitability for a permanent place in the revenue scheme. In the report which resulted from this investigation we have mainly an account of those aspects of our system which were likely to be of value to American students and financiers; but, at the same time, Dr. Haig has dealt with many matters of permanent and general interest. He had unrivalled opportunities for obtaining first-hand information, and the list of people with whom he came into contact is an imposing one. It is not surprising that a number of points are touched upon in his work, particularly in regard to inner political or historical facts, which cannot be found elsewhere. Upon the technical parallel drawn between the two systems it will suffice to say here that the work is exceedingly well done, the most difficult problems being handled with proportion and accuracy. Upon the second matter, relating to administrative efficiency, he has virtually nothing but the highest praise for us. He is impressed by the high degree of authority and responsibility given to our local officers, and the measure of trust that exists between them and the public. There could scarcely be a greater contrast than that afforded by the attitude of the British administration and that of the ordinary local Collector of Internal Revenue in the United States, and much of the dissatisfaction with direct taxation, which unquestionably exists in America, is traceable to strict, petty stickling over minor inconsequential details. Dr. Haig realises that such wide decentralisation of delicate and involved duties was only made possible by a long-established and highly developed Civil Service, and that therefore the United States has no prospect of immediately following suit.

For readers of this JOURNAL the section dealing with fiscal and economic consequences will probably be the most interesting. Dr. Haig spared no pains to compare the actual impressions of officials and business men with the results of general abstract reasoning. It is agreed that in some instances the liability to duty was taken into account when arriving at prices under Government contracts, so that the Government had to pay more for its supplies than it would have done if there had been no

duty, but after 1917 a closer control of conditions reduced this element to unimportance. The extent to which the Government were made " to pay their own taxes " cannot be even approximately estimated, but with such urgent demand, with an unlimited vote of credit, and with all suppliers engaged in full production, it must have been appreciable. As might be expected, the most diverse views were expressed as to the effect of the duty upon general prices; some merchants thought it had no effect in raising them, while others thought it all-important. The economist's view that such a tax could not operate to increase competitive prices, and must also come out of all monopoly profits, found little support in the daily press, which blamed the duty very largely for prevailing high prices. Dr. Haig is probably near the truth when he surmises that the existence of the duty led to a speedier approach to a potentially higher price—" one suspects the tax has been seized upon as an excuse for monopoly prices which would be just as high in the absence of the duty."

Dr. Haig refers to one manufacturer who told him that when his concern found itself, after a number of lean years, in possession of a large stock, and confronted by a demand so immense that it was in a position to ask almost any price, the fact that the duty had to be paid influenced the directors to charge a higher price than they otherwise would have asked, and he comments : " such tender-hearted tyros at profiteering, who depend on the tax to give them moral courage to charge what they can get for their goods in the market, are probably rare economic phenomena and, moreover, unless they happen to be selling directly to the consumer, anything they refrain from adding to their price is probably added to it by the next man in the marketing chain, so that the ultimate retail price is no lower."

Although agreeing with accepted views as to the incidence of a tax on a margin, Dr. Haig thinks that there may be long-period indirect effects in the direction of increased prices from a business tax of this kind. Such effects would arise from " laxity in management and extravagance." He might, with advantage, have been more expansive on the connection or distinction between what may be called the static incidence of the tax with a given flow of commodities and given state of production, and the ultimate effects set up by reactions through the interior mechanism of the tax. In substance, it amounted to a partnership between the Government and the taxpayer for a limited period, where the taxpayer, at small expense to himself, could call the tune with regard to expenditure of two kinds. First we have that expendi-

ture which would react on the business in future years, and give the taxpayer the undiminished benefit later on, such as large outlay on advertising and thorough overhauling of buildings with renewals and repairs. It is true there were physical limitations here, but it was worth the taxpayer's while to get the work done even at a much higher price, since only some 20 per cent. of it fell upon himself. If it had all fallen to be borne by himself it might have been postponed indefinitely, and therefore, to some extent, the duty forced production into channels that might suitably have been delayed till after the war, and in *pro tanto* starving the supply of essential objects, increased their price. Excessive expenditure upon advertising, though building up a future goodwill for the *particular* business, may not have had any beneficial effects on industry as a whole, either then or now, except so far as such advertising was strictly truthful, and brought to the front the goods most worthy of recognition by the public. To some extent it forced production into least advantageous channels at critical times, but it may have enabled essential news services to continue which would otherwise have gone under, so that it possibly indirectly cheapened other products. The second class of expenditure includes extravagance or persistence in wasteful and careless methods: unless, however, these methods also obtained amongst "non-E.P.D." payers producing "at the margin," they would not appear to have influenced price, but only to have depleted a certain range of individual profits. In so far as the more prosperous concerns are pioneers in improvements which get generally adopted, and in so far as they "set the pace," the negative action of E.P.D. in discouraging such concerns from seeking the best methods would also have retarded the general lowering of costs, including those of the marginal concerns, and so have maintained prices unnecessarily. The deflection of a part of economic profit away from the profit-maker and the Government to the wage-earners of a particular business, doubtless also has set a pace for that industry as a whole, and therefore, for all industries indirectly, and increased costs at the margin to some extent. The purchasing power of the Government and the profit-maker was reduced, and that of the wage-earner increased by a like sum, but as the Government had to secure the goods, anything it failed to get by taxation and direct loans had to be obtained by inflation, which therefore raised prices, except to the extent that the wage-earner put the extra receipts in question into War Loan, and refrained from spending them.

It must be remembered that the economic importance of

"non-E.P.D." concerns in their effect upon the incidence of the tax, gradually got less as general inflation brought more and more of them—even with restricted trade—above their fixed pre-war standards of profit. There is doubtless much truth in Dr. Haig's summary of the effects of "discouragement": "The British business men allege that their duty tends to sanctify the traditional profits of well-established concerns, rendering them immune from competition, and that it tends to discriminate against young and growing businesses. They claim that it places a penalty on aggressiveness and ability and a bounty on conservatism." But, as he rightly points out, it does not lie with those who must use the "repression" argument to urge so vehemently that any tax that is paid is passed on to the consumer in higher prices than would otherwise have existed.

The economic effects on prices in the long run, of such interference with the normal course as the conserving of wasting assets, such as minerals, or the postponement of rubber tapping until the E.P.D. should have passed away, and the results of depleting funds that would have been available for expansion and development, it is too early even yet to appraise; and therefore Dr. Haig's reasoned opinions of 1920 may have to be materially supplemented before a complete picture can be drawn. Meanwhile, the extension of the duty virtually to August 1921, with the great liabilities it is throwing upon the Exchequer, seems likely to turn this scheme of taxation in many instances into the most complicated arrangement ever devised for borrowing money for five years without paying interest on it.

J. C. STAMP

The English Capital Market. By F. LAVINGTON. (London: Methuen & Co. 1921. Pp. 297. Price 18*s*.)

THIS careful exposition of the relation of the Money Market to the industrial system will undoubtedly appeal to students of economic theory. The writer has been well disciplined in a rigorous school of analytic subtlety. But to the average City man, a book on the "English Capital Market," which barely recognises the changes of the past six years, but deals with the Quantity Theory (developing Dr. Marshall's evidence before the Royal Commission of 1888); which pays hardly any attention to the position of London as a centre of international finance, but discusses Uncertainty Bearing and Insecurity in the style of Professor Pigou—such a book cannot fail to seem rather

academic. Yet the broker and the jobber, if they could manage to read it, would no doubt be delighted, perhaps surprised, to learn that the payment they exact from society is, after all, not out of proportion to the services they render: that, in fact, they do make a net contribution to economic welfare.

Mr. Lavington's purpose is to bring out the significance of the Money Market as a coherent part of the organisation of production, and to consider the payment it obtains for its services. He regards as part of the Money Market not only the work of the banks, bill brokers, etc., but also the system of Trade Credit, the work of Building Societies, and even of the solicitor who arranges for the loan of capital on mortgage.

To those who seek an alternative to the present constitution of society, the purpose of this book might seem rather limited. They might admit that the Banks supply the means of effecting payments in the form of a cheque currency of unrivalled efficiency; that the Banks and the Issue Houses collect capital from points of plenty and carry it to points of scarcity; that the system of Trade Credit lowers the supply price of capital to many business men who would, in its absence, find it difficult to obtain supplies elsewhere; that the market for new securities formulates the social need for capital into an effective market demand; that (like the Banks) by adding together innumerable short lengths and small quantities of capital, it supplies business ability with the resources which make it effective; that the market for old securities, by its facilities for rapid exchange of securities, enables the burden of Waiting and Risk bearing to be continuously shifted from one capitalist to another, as his particular circumstances demand; that the increase of saving and investment effected by these agencies reacts on the supply of capital, lowering its costs of production, and consequently its supply price; that, on the whole, competition adequately protects the investor or consumer from all but his own ignorance or inclination. All this they might admit, but they would feel that Mr. Lavington is merely justifying the product of a system which itself requires justification.

It must not be imagined, however, that there is anything of special pleading in Mr. Lavington's work. The inquiry is conducted throughout in a severely scientific spirit. Mr. Lavington is fully aware that the "invisible hand" is not always able to guide the activities of the Money Market to the social advantage. The social effects of the negotiable security are not wholly desirable. In the work of the market

for new securities there is too little harmony between private and social interest. In the flotation of undertakings on the public market there is need for some intermediate marketing organisation to be responsible for these issues. Mr. Lavington has a chapter on various devices for protecting the public from the wiles of the company promoter. It is interesting to learn that the company law of this country is (to quote Professor Foxwell) "less exacting in its safeguards than that of any other great business community except, perhaps, the state of New Jersey."

With regard to the distribution of capital, modern banking developments would seem to produce a certain degree of rigidity. Certain classes, very capable of using capital well, tend to be excluded from its use.

The active regulation of variations in the purchasing power of sterling is of the highest social importance. Yet against temporary causes tending to disturb its home value, the market fails to react effectively. There is the difficulty of measuring, at any rate in practice, the true social need for currency. There is the almost uncontrolled influence of Trade credit. There is the absence of common action on the part of the Joint Stock Banks to control the supply of money.

It is interesting to note that the market for new securities plays a smaller part than would be generally supposed in facilitating the movement of the annual flow of free capital into home investment. The explanation, Mr. Lavington thinks, lies in the fact that the most common form of limited liability organisation is not the Public, but the Private Joint Stock company. The vast majority of joint stock companies coming into being each year are thus already in possession of capital. But the consolidation and extension of industrial concerns due to the war, and their growing practice of re-investing large portions of their accumulated profits in their own business, are likely—though for the present the tendency is obscured—still more to narrow the scope of the Market's services. Further, it is possible that there will be not only a narrowing of the scope, but also a reaction upon the nature of these services. Given the domination of industry by a comparatively few large concerns, and the shrinkage of the stream of free capital available for investment, shall we be able to say that one of the chief services of the Money Market is its bringing together the appropriate business ability and the requisite capital, and making possible the separate production of each?

A review of this kind must necessarily omit many of the topics which Mr. Lavington handles—and he seldom handles a topic without appearing to set it in a new light—but attention may be directed to his remarks on the value of organised speculation and on the significance of the marketability of securities.

Mr. Lavington offers us, not indeed a vivid description—for that we must turn to Mr. Withers—but a calm and judicial interpretation of the Money Market from the point of view of the theoretical economist. Quite apart from its clear exposition of leading principles, this scholarly book is worth reading, if only for the quality of its *obiter dicta* and the suggestiveness of its subsidiary discussions.

J. LEMBERGER

Foreign Exchange, Before, During and After the War. By T. E. GREGORY, B.Sc. (Oxford University Press. Pp. 116. Price 2*s.* 6*d.*)

THE writer of this book has, from the circumstances of the times, one advantage over pre-war writers on exchange, in the fact that there is now so much more experience of fluctuations on a large scale, that the subject is much more alive than was the case before the war. One drawback is found, however, in the tendency produced by present conditions to treat the pre-war situation, with its almost universal gold-standard currencies, as a state of things rather easily described as one in which money was readily made to have the same purchasing power by the prompt effect of very slight fluctuations in exchange. On page 82, for instance, with respect to a group of countries all in touch with one another it is said that " there will tend to be established a uniform price-level, or, what is the same thing, the value of money in all the different places will tend to be the same." It may well be objected that this overlooks the important fact that owing to various conditions it was the normal thing before the war that money would buy a good deal more in some countries than in others—more in Belgium, for instance, than in the United States. It is submitted that the meaning of " purchasing power parity " under the conditions of a universal gold standard requires more analysis than has been given to it by writers of the school to which the author, in his preface, pronounces his adherence. Such analysis, it is suggested, would show that there is something in what Miss Van Dorp and other critics are trying to get at,

even though they may have failed to make their position clear. It is not sufficient merely to attack the use of expressions such as that the exchanges are dislocated owing to "an excess of imports over exports," which are necessarily too brief to express the whole truth. The author's criticism of argument of this kind is good, as far as it goes, but it does not appear to get quite to the bottom of the question.

The main thesis is that exchanges are dislocated because of the multiplication of paper money and its continued emission by many Governments. Few, if any, economists would deny that this is the substantial factor in bringing about the present situation, and that all attempts to prevent continuance of the fall in the value of marks, etc., must be substantially unsuccessful so long as their volume is continually augmented. The author appears, however, to go rather too far in denying the usefulness, to a limited extent, of some of the devices for checking the fall in exchanges. The restriction of luxury imports, for instance, is quite defensible on reasonable grounds, as having almost inevitably, if not quite inevitably, a tendency to improve the value of the money of the country making the restriction, and similarly the prohibition of export of capital, in so far as it is really feasible. With reference to attempts to charge higher prices to foreigners, by means presumably of Government assisted discrimination between domestic and foreign sales, it is not essential, for the obtaining of some success, that the article in question should be monopolised by the exporting country, or that the demand should be inelastic.

On the subject of the discrepancies between the "required" values of pounds, francs, etc., in terms of dollars as judged by index numbers and prices, and the actual values in the exchange market, the author appears to admit only one explanation, the tendency to anticipate future over-issues or mistakenly to calculate upon a future improvement. These anticipations must, no doubt, be factors of considerable importance, but is it not worth while considering whether the "balance of trade" theory may not have something in it also?

The book contains a number of statistical tables which will be found useful for reference.

C. F. BICKERDIKE

Foreign Exchange and Foreign Bills in Theory and Practice. By W. F. SPALDING. (Sir Isaac Pitman & Sons. Pp. 246. Price 7*s.* 6*d.*)

THIS is the fourth edition of a work first published in August 1915. It is natural, therefore, that it is largely concerned with the pre-war exchanges, before there was the multiplicity of inconvertible paper currencies, but as successive editions have been made there have been additions dealing with developments up to date. In the main, however, it may be said that the state of things dealt with is that of the pre-war exchanges, and the reader may feel that he would like to have further information as to the extent to which the present state of things has modified the practical machinery of various kinds which is described in considerable detail. Doubtless much remains substantially unchanged, even though sterling no longer means gold, but at least sections such as Chapter VIII., on "Bank Rate and Market Rate of Discount in Connection with the Fluctuations in the Foreign Exchanges," can hardly be regarded as adequate for present-day requirements, even when read in conjunction with the additional chapters which have been inserted from time to time dealing with the war and paper money.

The book is written for the use of those who are engaged, or likely to be engaged, in business transactions, and is descriptive of the machinery of financing international transactions rather than with economic theory. Chapter XII., for instance, on the Gold Exchange systems as formerly operated in India and other countries, gives only an elementary sketch of the system, but more could hardly be expected, perhaps, having regard to the purpose of the book. What the reader will find mainly dealt with in the book is the description of various kinds of credit instruments in use in connection with trade between this country and many different parts of the world, what is done with the documents by the various parties, and how the interests of the lenders of credit are safeguarded.

Even the island of Cyprus has a short chapter explaining its monetary system. An interesting short chapter is that dealing with the Scandinavian countries during the war and the breakdown of the pre-war arrangements for maintaining an invariable par of exchange between Norway, Sweden and Denmark. Would it not be, however, rather more correct to put the policy of the Bank of Sweden in maintaining a comparatively high discount rate as a point of fundamental importance, rather than to refer

to it merely as one other factor to be noted? Sweden, in fact, took more effective steps to prevent inflation, and, in consequence, her currency secured a relatively higher value, the higher discount rate being a most essential part of the policy.

May we hope that the author will find opportunity to bring out a book written specifically for the new conditions of the world? Students of economics, as well as business men, would welcome further light on such questions as whether deliberate manipulation of paper money exchanges is practised extensively, and if so, by whom, and also as to whether the variations in exchange really do involve very heavy risks to the banks. It is explained in Chapter XIV. how the trader avoids the risks by shifting them on to the banks. Are we to infer, contrary to what is stated in some other places, that the trader himself can always avoid these risks? Then with regard to the banks, the implication seems to be (pp. 151 and 152) that they can usually arrange, by having transactions both ways, to reduce their risks in the case of forward contracts to comparatively small dimensions. If this is the case, it is important in considering the question whether paper money is really as bad as it appears at first sight. The author appears to share the traditional attitude of strong condemnation of inconvertible paper money, but this chapter rather suggests that it is not, in practice, so bad as he would have us believe. In view of the probable long continuance of inconvertible paper monies in many important countries, it is to be hoped that more light may be thrown on these questions.

Another matter which appears to be likely to deserve fuller treatment is the Trust Receipt. The law on the subject appears to be doubtful in this country, but is it not one of those things which will have to be worked out somehow? Is it the rest of the world that should learn from us or the other way about? Some further light on the reasons for the evolution of this system in the United States and elsewhere would be of interest from the point of view of business men and lawyers. The author may at all events be commended for giving at least some attention to the subject.

C. F. BICKERDIKE

The Functions of Money. By WILLIAM F. SPALDING. (Sir Isaac Pitman & Sons, Ltd.)

WE must be grateful to Mr. Spalding for giving us a convenient, readable, and, in the main, accurate summary of the

theories concerning money which are most extensively held to-day. If he has not illumined the dark spots nor added materially to our knowledge, we must not complain. Within the compass of so small a work it would be impossible to do so, even if, which is doubtful, the present state of our knowledge admitted it.

It is inevitable that any work on the nature of money should begin by re-stating Adam Smith's position. It has become so axiomatic that early man lived by barter, and the subsequent clumsy attempts to find a suitable commodity to serve as a "medium" between any two other commodities form such obvious steps towards the ultimately more perfect state in which everybody mysteriously agreed to accept gold and silver in exchange for all commodities, that it may seem hardly worth while to investigate further. It must have been so; therefore, it was so.

Yet it can hardly be amiss to realise how slender is the foundation on which Adam Smith's statements (far more cautious than subsequent works would lead one to think) rest. His fourth chapter is but a very minor part of his work. He was not, and could hardly have been, an original investigator in the field of early human civilisations. There was not then the material on which to build. There is little enough even now, many though the workers.

If man ever did live by barter, it was in a period so remote that we have no knowledge of it, and from that of which we have no knowledge we can infer nothing. There is no period, however ancient, of which records exist, in which buying and selling did not go on as to-day. There is no known race of which it can be affirmed that they deal or have ever dealt among themselves exclusively, or even mainly, by barter—for barter and money in some one of its many forms, visible or invisible (money, strange as it may sound, may be and often is invisible), may co-exist. The casual observations of travellers in the interior of Africa or the Highlands of Asia or among the Cannibal Islanders do not suffice to convince. They were impelled by the love of adventure, or of God or Mammon; never, that I know of, by a thirst for knowledge of the mechanism of finance among the aborigines—a task for which few if any travellers are well equipped.

And then, when we come to the supposed "media," are we really justified in concluding from a passage or two in Homer (a poet, I believe, not an expert in commerce) about the value

of the armour of Diomede or Glaucus that the Greeks of those days referred all their values to some "standard" ox? And can we infer from a few passages in the Bible about shekels and pieces of silver what the commercial machinery of the Jews was? Even if these passages were correctly translated, which according to the latest authority they are not, the written record, as we have it, is centuries later than the transactions to which it refers—about fifteen hundred years later in the case of Abraham's purchase of the field of Machpelah.

As to the modern examples of commodities used as money—tobacco, sugar, dried cod, nails, and so forth, the last two examples are endowed with a more than cat-like vitality, having been torn to bits about a hundred years ago by writers who knew the simple explanation, as Adam Smith did not. And the other examples are of no more value. Money was as well known and in as general use in our colonies in the seventeenth and eighteenth centuries as it is with us to-day.

In the chapter on the much-debated Quantity Theory, attention must be called to at least one surprising statement. The author says that "the value of money not only varies inversely with its quantity, but also inversely with its velocity of circulation"—a mathematical impossibility, by the way—and he goes on to say that "in stating this we are not creating an abstruse problem, for the velocity of circulation is easily ascertainable (and here he quotes Professor Fisher) by dividing the total money payments for goods in the course of a year by the average amount of money in circulation by which those payments are effected." We are accustomed to Professor Fisher's breezy way of disposing of difficult problems, but to say that it is easy to divide the total money payments by the amount of money in circulation makes the reader gasp. In fact, the Quantity Theory can neither be proved nor disproved by direct evidence, because it is impossible to know either of these factors.

Perhaps the weakest chapter in the book is that entitled "Some Historical Facts," few of which can with certainty be regarded as facts at all. There is, for example, no serious evidence of the use of gold or silver as the medium of exchange in early Egypt or Babylonia. The Chinese *tael* is not a weight of silver. There are, as the author himself says later, innumerable *taels*, the exchange values of which constantly vary, and some of them have altered considerably in value in the course of time. The statement that the stamp on Greek coins guaranteed their weight and fineness is in contradiction with the opinion

expressed by Barclay Head in the latest edition of his work. Nor can it be said that "the Greeks had a definite manner of reckoning the proportion of gold to silver and the more common ratio was 10 : 1." On the contrary, the various attempts to find out their relative values have met with little success, and there is a good deal of disagreement between the various writers. Nor are we justified in stating as a fact the fanciful theory that King Croesus introduced bi-metallism. The statement that the Roman As coins date from 450 B.C. is not now held to be correct. Though the As is believed to have been in use as a money-unit at that time, the best opinion seems to be that the earliest coins are a century later. And there is no evidence of any value that the coins originally weighed a Roman pound. They were from the outset extremely variable.

The nineteen pages of the chapter on "The Principal Monetary Systems" are rather a short allowance for so big a subject, but are useful as an introduction to the study of it. The last chapter, "Money in International Commerce," is, as might be expected, altogether admirable. It gives, in the shortest possible space, a wonderfully clear idea of how international commerce is carried on. But both these chapters would have been more useful to the student had the author appended a list of works in which the subjects might be pursued in more detail.

A. M. INNES

The History of the Woollen and Worsted Industries. By E. LIPSON. (London: A. and C. Black. 1921. Pp. x + 273.)

THIS is the first of a series of Histories of British Industries, of which Mr. Lipson is General Editor. It has been "designed to meet the needs of Training Colleges, Continuation Schools, Workers' Tutorial Classes, and all similar institutions." It is, therefore, written without footnote apparatus, but with a bibliography, a bibliography which shows the learning that one would expect from its author. Besides the results of his own research, Mr. Lipson has had the advantage of Professor Heaton's remarkable *History of the Yorkshire Woollen and Worsted Industries*. He has adopted, so far as possible, the method of letting contemporaries tell their own tale, with excellent results. Although not writing primarily for scholars, he has put them under an obligation to him in many places. There is, for example, an account of wool smuggling (pp. 88 *sqq.*) under the export prohibition system of the seventeenth and eighteenth centuries, both illuminating

and amusing. So far as I can remember, the explanation (p. 180) that the workmen's opposition to machinery was partly based on a belief that the stock of wool was fixed—as in fact it very nearly was, before Australia developed—and that therefore machinery must mean both immediate and ultimate unemployment, has not been put forward before; it has certainly not been put forward so clearly.

A few technical and a few general criticisms suggest themselves. Probably it was to avoid burdening his unlearned readers with controversy that Mr. Lipson (p. 28) allowed himself to give the impression that masters, journeymen, and 'prentices were all "members" of a craft-gild in the same sense. He does once speak of the "inner circle" of the gild; but he nowhere states that masters made all the rules. "The aim of the gild system was, in short, to establish as nearly as possible a condition of absolute equality [among masters]; and the gild ordinances seem inspired almost by a spirit of communism." The words in brackets are the reviewer's. The evidence of "communism" is that if one master among the London Shearmen had three journeymen, and another had none, the man with none might take one from his neighbour. That is what I should call "jealous egalitarianism" among masters. I cannot think that the taken journeyman was conscious of much "communism" in the system. But I fear that the unlearned reader, probably familiar with Gild Socialist distortions of medieval history, may go away with the impression that there was really something "communistic" about a gild.

Is the sweeping statement that "the fuller bought the cloth raw and sold it fulled" generally true? Mr. Lipson gives evidence for the fact from a statute of 1391, and other evidence is, of course, available. But commission fulling, or fulling at manorial mills for a fee, began very early and may have been, so to speak, primitive.

Coming to the inventions (p. 142), Mr. Lipson says that all except the fly-shuttle and the combing machine "were first intended for the cotton industry"; but explains a few pages later that Paul and Wyatt's spinning machine was first used for wool. He quotes several lines from Dyer's "Fleece" about it. And in a footnote he admits that Paul's carding machine is also perhaps an exception. This leaves few for the rule.

On p. 174 that mysterious word of the wool technologist "loftiness," as denoting a character of wool, is used without explanation. But all these are small matters.

Three criticisms of the general structure of the book in relation to its purpose have more weight. The first, and slightest, is that the significance of the widespread and unregulated "household industry" of the Middle Ages is perhaps underrated. When we talk of industry "spreading" to the country, I am inclined to think that often we are pointing to the fact that in a certain district "household" became "market" weavers. Probably Mr. Lipson agrees, as some words on p. 223 suggest. But I should like to have seen the gilds pictured as working against this dim domestic background.

Secondly, the book almost completely neglects all history since 1850, except for a few figures from the industrial census and a reference of readers to a book by Dr. Clapham. I cannot but think that, for the purposes of the series, this is a very grave omission. The introduction of cotton warps, of alpaca and of mohair, the whole shoddy industry and the whole of nineteenth-century trade unionism get into a twelve-line footnote! The industries in 1850 were almost as different from those of 1920 as they were from those of 1800. In 1850 the Woollen Clothiers' Company Mills were in full swing; the mule was far from universal in woollen spinning; very many important woollen businesses used hand-looms only; Leeds was a centre of broadcloth manufacture; and the industrial atmosphere was not really "modern." Upon economic, more perhaps than upon any other class of historians, is laid the duty of bridging the blind spot between fully written history, which always stops a generation or two short of actuality, and the world of to-day. The bridge is not made here.

Thirdly, which is probably the explanation of "secondly," nowhere in the book can one catch the beat of the looms or sniff the rank smell of the wool-washing troughs. Perhaps it is a literary accident; but the text certainly suggests a knowledge of the world of to-day based more on reading about it than on looking at it.

J. H. CLAPHAM

The Yorkshire Woollen and Worsted Industries from the Earliest Times up to the Industrial Revolution. By H. HEATON. (Vol. X of the *Oxford Historical Literary Studies*, edited by C. H. Firth and W. Raleigh.) (Oxford: Clarendon Press. 1920. Pp. 459.)

AMONG the industries of England, the woollen manufacture—*inter reipublicæ columina*, as Camden described it—enjoys pre-

eminence: partly on account of its long history, which extends over eight centuries, partly on account of its wide geographical distribution. In the volume under review, which has grown out of a thesis written for the Honours School of Modern History in the University of Leeds, Mr. Heaton makes no attempt to cover the whole field of this history. Of the three great manufacturing areas associated with the woollen industry—East Anglia, the West Country, and Yorkshire—he deals only with one, namely, Yorkshire; and even the history of the Yorkshire industry is carried down only to "the eve of the Industrial Revolution." But within the limits thus indicated Mr. Heaton has produced a scholarly piece of work. He has evidently spared no pains to make himself acquainted with the original sources, and the especial value of his book lies in the fact that he has utilised not only the documents preserved in the British Museum and the Record Office, but also "papers found in various parts of the West Riding, chiefly in the hands of local authorities and the cellars of solicitors' offices." Traversing ground which had already been covered in a general way by Dr. Maud Sellers in her excellent chapter on the "Textile Industries" in *The Victoria County History of Yorkshire*, Mr. Heaton has supplied many interesting details and thrown light on obscure points. One may commend in particular the use which the author has made of the Aulnage Rolls, the discussion of the trade depression in the reign of James I, and the account of the great Yorkshire trials which are so illuminating for the study of the Yorkshire textile industry.

On points of detail Mr. Heaton's book—like every other book which handles a great number of facts—invites occasional comment. The statement that the Ordinance of 1326 forbade any person to wear foreign cloth "except royalty, nobility and those paying an annual rental of £30 or over" (p. 13) seems a *lapsus calami*. What Edward II's Ordinance of the Staple enacted was that foreign cloth should not be worn except by the royal family, the nobility, dignitaries of the Church, and persons "who can spend forty pounds sterling a year of their rents," *i. e.* landowners whose income from the rents of their land was forty pounds a year. It is not invariably true that "the master alone was eligible for the offices of the gild and he alone voted in the elections" (p. 37). At Beverley—to take the example of a Yorkshire town—the "journeyman brethren" of the Weavers' gild had a vote in the election of officers, and elsewhere it was not unknown for journeymen even to hold office as wardens.

In a good discussion of the wages paid to textile workers Mr. Heaton appears to imply (p. 110) that the Act of 1563 was not definitely applied to the textile industries until 1603, but the principle of assessment of wages by justices of the peace embodied in the Elizabethan Statute was definitely extended to the woollen industry in 1597–8, and the novelty of the Jacobean measure lay in its minimum-wage clauses. The author remarks that it is somewhat surprising to find the justices fixing time-rates for weaving instead of piece-rates (p. 112). But, as the justices of Gloucestershire discovered in 1756 when they were called upon to regulate the wages of textile workers, it was not an easy matter to frame equitable piece-rates for weaving. Many technical factors had to be considered: the number and size of the threads, the weight of the warp, the fineness of the weft, the breadth of the cloth, and the technical skill of the weaver. We cannot agree with Mr. Heaton that "the worsted industry which grew up around Bradford . . . was an expansion made largely by outrivalling the East Anglian worsted manufacturer" (p. 259), or that the prosperity of Norwich "continued until about the sixties of the eighteenth century, when the competition of the North . . . began to bring about its decline" (p. 264). The success of the Yorkshire worsted men was not achieved at the expense of the Norwich trade, since the latter was growing at the same time: indeed, Arthur Young states that the trade of Norwich was trebled between 1700 and 1770; moreover, the Norwich manufacturers made the finer qualities of worsted and the Yorkshire manufacturers the middle and lower qualities. There is, in fact, no real evidence of a decline in the Norwich trade until the second and third decades of the nineteenth century.

In connection with the textile inventions the author remarks: "The fact that most of the inventions came in the cotton manufacture suggests that in a new industry . . . technical progress is likely to be more rapid" (p. 323). Yet Kay's fly shuttle, Paul's carding machine, Cartwright's combing machine, and possibly his power-loom, "came" first in the woollen and worsted industries. The textile inventions lie, of course, outside the range of Mr. Heaton's investigations, but he thinks that they "were adopted very slowly in the West Riding industry." This is a debatable point. In the preliminary processes of the woollen industry—scribbling, carding, and slubbing—the use of machinery was already general in the last decade of the eighteenth century; as regards spinning, the jenny was used soon after its invention, and a worsted factory with water-frames was erected at Adding-

ham as early as 1787; in the case of weaving the fly-shuttle was adopted by the West Riding clothiers in the inventor's own lifetime, and though the power-loom made tardy progress owing to technical reasons, there were between five and six thousand looms in the woollen and worsted industries in 1835.

Although Mr. Heaton deals at length with the domestic system of Yorkshire, the picture which he draws hardly does justice to the really salient features of industrial organisation in the North of England. He writes:

> "The Report of the Parliamentary Committee of 1806 has created the impression that the differences between the industrial organisation in Yorkshire and the West of England were fundamental. This was not so." The "difference between the character of the Yorkshire and West of England clothiers . . . was a matter of degree rather than of kind" (p. 92).

It is true that Yorkshire contained a class of large clothiers who corresponded to the clothiers of the West Country, but the typical clothier of the North was the small "domestic manufacturer," and it was this latter class, the counterpart of the yeomanry in agriculture, which enlisted the unstinted admiration of contemporaries. Now the domestic manufacturer was a manual craftsman who worked up the wool through all the different stages in his own house, assisted by his wife, children, and journeymen. The West Country clothier, on the other hand, was not a manual worker, but an employer of labour who sometimes employed as many as 800 persons or even more. In short, the clothier of the North was a workman who owned the material on which he worked, while the clothier of the West was a capitalist who differs from the modern captain of industry in the respect that his employees did their work at home. A domestic manufacturer whose business prospered might develop into a large clothier of the West Country pattern, but the study of industrial conditions in the West of England reveals a structure of society essentially different from that existing in the North. Mr. Heaton lays stress upon the defects of the Yorkshire domestic system, but he does not point out the great merits which the class of domestic manufacturers had in the eyes of contemporaries—the absence of friction between masters and men, and the opportunities afforded for every workman to gain his economic independence.

Two minor points may be noticed. Blackwell Hall was pur-

chased by the "Mayor and Commonalty" of London, not in 1397 (p. 147), but as Mr. Kingsford has shown in his edition of Stow's *Survey*, in 1396. The date of the repeal of the "law concerning apprenticeship" in the woollen industry was not 1813 (p. 312), but 1809; it was in 1814 that the repeal was made general for all industries.

Mr. Heaton's book is the first in the series of *Oxford Historical and Literary Studies* which deals with Economic History. We welcome the innovation in the hope that the editors will endeavour to give us similar studies equal in interest and in scholarly merit.

E. LIPSON

The League of Nations Starts. (London: Macmillan. 1920. Pp. vii + 282. Price 10*s.* 6*d.*)

IT is the special merit of *The League of Nations Starts* that it traces the origins and makes known for the first time in handy and inclusive form those aspects and institutions of the League which have received little attention compared to the Assembly, the Council, the Secretariat and the Permanent Court of Justice, though these also, of course, are dealt with,—in contributions from M. Bourgeois and Mr. Fosdick. Out of thirteen contributions four deal with economics, finance, communications (M. Claveille) and health (Mr. R. P. Strong), one with the International Labour Organisation (Mr. H. B. Butler), one with the administration of the Saar and Danzig, and one with mandates and the protection of minorities (Mr. Ormsby Gore), while Dr. Shotwell's very suggestive essay on "First Pages from the History of the League of Nations" is orientated towards such functions of the League as those fulfilled by the Technical Organisations. It is, however, in some ways unfortunate that the book was published before the meeting of the Assembly, for very important decisions were then taken concerning the Technical Organisations of the League.

Of particular value and interest are the chapters on "The Inter-Allied Machinery in War-Time" and on "Economics and Finance," the former by Mr. Rublee, one of the Delegates to the Inter-Allied Maritime Transport Council, the latter by Mr. Salter, now Secretary-General of the Reparations Commission. These chapters, in conjunction with Sir Maurice Hankey's paper on "Diplomacy by Conference," read before the British Institute for International Affairs and printed in the *Round Table* (March,

1921), furnish authoritative material for an appreciation of the new development of methods for taking in hand the ever-increasing number of questions of acknowledged international concern. Mr. Salter begins with a very clear analysis of the economic duties of the League, and then proceeds to sketch his conception of its instrumentality. He considers that its object should normally be to secure prior consultation and agreement rather than immediate action. In his opinion neither the Council nor the Assembly nor the Secretariat can do effective work in the economic sphere; what is required is the creation of expert councils including among their members those who have the actual power of decision in their respective Governments; these councils should be based upon sectional organisations in the main capitals of the world and should hold periodical general conferences; they should be co-ordinated and assisted by the Secretariat of the League, but not actually controlled in their current action even by the Council of the League.

The Advisory Economic and Financial Committee, set up by the Assembly last December, is, as even its title shows, conceived on quite contrary lines. There were strong currents in the Assembly in favour of delimiting strictly the powers of this and such other bodies as the Organisation for Communications and Transit and the Health Organisation in such a manner that not only should the Secretariat assure strict co-ordination, but the Council have full opportunity of exercising very considerable control, and it was under these conditions that the Technical Organisations were created. The action of the Assembly in this matter may seem to have been unduly lacking in boldness and vision, but boldness cannot with fairness be expected of a body whose decisions have to be taken unanimously; the money side of the question was much to the fore, and in certain respects the fundamental cleavage of interests and difference of attitude between European and extra-European countries cannot be obviated. On the whole, the six months that have elapsed since the meeting of the Assembly have seen a promising increase of constructive work, which, given the desire of the Governments, and above all of the peoples behind them, to develop and utilise it, may well prove the solid basis for a steady growth in the activities of the League.

On the other hand, it is important to remember that certain of the factors so clearly set out by Mr. Rublee as being of chief weight in making for the success of the many Inter-Allied organisations during the War have now largely ceased to operate and

cannot make for the similar success of the Technical Organisations of the League. The " limiting factor " of tonnage can no longer act as the final basis for decisions. The war-time " equality of sacrifice in a common cause " cannot but raise doubts as to how far there is now felt to be any common cause and as to how far equality of compensation for sacrifice has not been substituted. Direct contact means something very different when Brazil and Australia and Sweden, and not only " the principal Allied and Associated Powers," are involved. The possibility of persuading many millions to lower their standards of life to a minimum capable of some approximate statistical computation in terms of cost of living is vanishing now that the obvious dangers are past and the great emotional appeals, in most cases, impossible to evoke. There is, of course, much of value for the institutions of the League in the living experience available of the actual working of international organisations during the War, but the foundations and inner spirit cannot for a moment be taken as secure without blindly courting failure.

B. H. SUMNER

Labour as an International Problem. (London: Macmillan. 1920. Pp. ix + 345. Price 18*s.*)

THIS volume is composed of nine essays by eminent labour leaders or public servants, all of whom, with one exception, are closely connected with the International Labour Organisation. The criticisms which can be made against this form of treatment of a subject are largely met by the editor, Mr. Solano, in his balanced and comprehensive introduction. The first two chapters, by Mr. Barnes and Dr. Shotwell, deal admirably with the origin, constitution and general functions of the International Labour Organisation. Mr. Appleton follows with an essay on the general attitude of the International Federation of Trade Unions, written before his resignation of its presidency; he examines the conflicting forces animating the post-war labour movement and agrees with Mr. Barnes in advocating an ordered and constructive policy of industrial reform as the surest method of advancing social progress. He is extremely cautious in defining the policy of the Federation to the International Labour Organisation, but, as pointed out in the introduction, he wrote before the election to the Governing Body of the International Labour Office of M. Jouhaux and M. Oudegeest, the well-known Trade

Union leaders in France and Holland, who are respectively Vice-President and General Secretary of the Federation. Mr. Minoru Oka, one of the Japanese Delegates at the Paris Peace Conference, and M. Vandervelde, the famous Belgian Socialist Minister, deal with the special labour problems of their own countries. Mr. Oka's general considerations on the relation between conditions in Japan and those in Western Europe merit particular attention; he believes that, given wise treatment of the Japanese workers, it may be possible for Japan to profit from the experience of Europe during the last fifty years in such a manner as to avoid a repetition of similar class struggles and labour crises. The remaining five chapters constitute an authoritative review of the practical development of the international regulation of labour questions down to the Washington and Genoa Conferences. In the Appendices are included the Labour Part of the Treaties of Peace and the texts of the draft conventions and recommendations adopted at these two Conferences.

Great care is taken in the different essays to set forth various aspects of the problem of the international regulation of labour questions and its scope and purpose; there is, however, on the whole insufficient recognition given to the fundamental attacks now current against the evolution of social reform through parliamentary, or even peaceful, action. Mr. Barnes points out that the difficulties of raising the general standard of life among the working class by international action are in essence the same as those experienced in the national sphere; nations, in a similar manner to individual employers, are deterred from carrying out reforms because they fear to be handicapped thereby in competition with other nations. Until now there has been no possibility of organised international pressure being brought to bear with the object of securing simultaneous and relatively uniform progress. Simultaneity is essential: on the other hand, the idea of a strictly uniform standard is regarded as being impossible, even if desirable. It is thus from one point of view a minimum standard with which the International Labour Organisation is particularly devised to assure. Such an assurance will permit of further development of the higher standards prevailing in the "advanced" countries. The opposition to rigid uniformity is marked in the Treaty of Peace by the express recognition of the effect of varying climatic and social conditions and by the provision that no country shall be asked "to lessen the protection afforded by its existing legislation to the workers concerned." At the same time, the actual existence of a considerable degree

of uniformity in the habits, conditions of work and mental background of the workers in certain great regions of the world is fairly emphasised by M. Fontaine as being one of the chief causes of the need of realising the aspirations of the workers by reforms, which yet must be undertaken on an international scale, since the strictly economic and financial factors in most cases preclude the success of reforms attempted only on a regional basis. A good instance of such international regulation of industry is shown in Miss Sanger's informing chapter to be the case of the use of poisonous ingredients in certain processes and of preventive or remedial measures against accidents and occupational diseases.

Miss Sanger, and several of the other contributors, point out that among the main obstacles to such international regulation in the past have been the lack of any regular machinery and of any consecutive policy and the unrepresentative, semi-diplomatic character of such occasional bodies as were called together. The reader will find abundant proof in the pages of Mr. Barnes, Dr. Shotwell, Mr. Butler and M. Albert Thomas of how those obstacles have now been removed. Mr. Barnes's opening chapter on the scope and purpose of international labour legislation includes a clear summary of the main provisions of the Labour Part of the Treaty. His convincing defence of the composition of the annual Labour Conference,—each delegation consists of two Government, one employers' and one workers' representative,—should specially be noted. The Treaty expressly provides that each Member shall appoint employers' and workers' delegates, as well as their technical advisers, "in agreement with the industrial organisations, if such organisations exist, which are most representative of employers or work-people, as the case may be." Mr. Barnes, as also Mr. Oka in writing of Japan, justifiably emphasise the great advance thus made in official recognition of the right of combination, and Mr. Butler furnishes solid support in pointing out the practical experience of the Washington Conference in this question of representation. Mr. Barnes's chapter closes, however, with the significant reminder that in many countries the difficulties as regards combination now come mainly from the workers themselves: "There are too many Trade Unions and too little Trade Unionism." He is optimistic, nevertheless, as to the efforts of labour leaders to rectify existing anomalies by federation and amalgamation.

It will doubtless be most gratifying to English readers to find in Dr. Shotwell's vivid survey of the historical background and working out of the new machinery incorporated in the

Treaty of Peace repeated praise of the original draft of the Labour Part of the Treaty drawn up by the British Ministry of Labour and of the patient skill of the British Delegates at Paris in accommodating this draft to American requirements, the most important of which were concerned with the constitutional difficulty of the relationship between the treaty-making power in the United States and the authorities competent in labour legislation, *i. e.* the individual States. A very clear idea is given of the extent to which the Labour Conference can be said to initiate legislation on an international scale and of the two chief methods—draft conventions and recommendations—by which it acts.

The book closes with two absorbing chapters from M. Albert Thomas and Mr. Butler. M. Thomas, the famous ex-Minister of Munitions, outlines the initial organisation of the International Labour Office, of which he is the Director, and sums up in a few vivid pages its *rôle* and the spirit with which it is inspired: the reader will certainly wish that this chapter were longer; he cannot do better than read M. Thomas's articles in the January numbers of the *Quarterly Review* and the *International Labour Review*. Mr. Butler, who was the Secretary-General of the Washington Conference and is now the Deputy-Director of the Labour Office, compresses into his fifty admirable pages on that Conference the solid basis of achievement and experience which goes far to show that the international idea is not "a kind of watery friendship" without profit or hope of endurance, but a practical "movement for the ordered improvement of the lot of mankind."

B. H. SUMNER

The British in China—and Far Eastern Trade. By C. A. MIDDLETON-SMITH, M.Sc. (London: Constable & Co., Ltd. Pp. ix + 295. Price 18*s.* net.)

As a contribution to our economic literature the value of this work is probably not very great, but, for all that, it is an interesting study of men and affairs. The book is refreshingly unconventional, due in a large measure, we should say, to the fact that it was written in queer places. Parts were evolved on steamers off the China coast; others in a sedan chair in a Chinese city; others in the "Forbidden City," in Peking and in a Chinese gaming-house at Canton. The result, if rather curious, is to show

us that by probing beneath the surface the author has got down to the bedrock of things Chinese. He reveals that of all the countries of the earth China contains the most vast and undeveloped natural resources; it is a land of untold latent wealth, which contains within its borders a remedy, not only for most of its own economic troubles—and they are many—but even, the author avers, for the economic ills of Europe and America. If only the boundless wealth of China were set free by the application of Anglo-Saxon methods of industry and government, we read, the world could quickly obtain all the raw materials it needs so badly, and the Chinese would acquire the wealth necessary to lift the country and its people from the present slough of despond into which they seem to have drifted. Just so; but the reader will doubtless wonder whether even this alluring prospect will, in the present chaotic state of the world's finance, tempt Europe and America to extend the credit facilities which, after all, are what the world most requires to shift raw materials from those who have to those who have not. Nevertheless, it is, we believe, the earnest desire of the Four-Power Consortium to assist China in obtaining, through the establishment of a strong and suitable Central Government, the degree of security required for the development of her immense natural resources, though, as the British representative of that Consortium recently said, any reform in China must come from within. China can only be saved by her own exertions, a fact which is slowly but surely being borne upon the thinking Chinese. As this volume clearly shows, however, the way of salvation for China lies through the extension of her foreign trade.

Mr. Smith is a whole-hearted exponent of British methods, and he devotes much space to a description of trade and commerce with China, that land of strange and devious devices. For past and present British traders and financiers in China he has a very high regard. The beginning of our relations with China are traced back through several centuries, to a period, in fact, when a letter was sent from Queen Elizabeth to the Emperor of China asserting "principles of free and equal intercourse between the peoples of the world, which is to-day the pivot of the endeavours of the wisest Anglo-Saxon statesmen." Trading in the early days was perhaps somewhat negligible, being left rather to the adventurers than to the more cautious and conservative men of affairs, but from 1885 to 1904 the value of China's overseas trade is shown to have increased steadily. As an average of three years, in 1885 the total was 180·8 millions of Haikwan taels; in 1904

it was 523 millions. To go back a little, in 1883, China's imports and exports were valued at 143·8 millions of taels; the figures were practically doubled every ten years, until in 1913 the total was 973·8 millions of taels. In 1919 (the figures for 1920 have not yet reached this country) the total trade figures were, Haikwan taels 1,277,807,092, made up as follows: imports, Hk. taels 679,529,544, less re-exports Hk. taels 32,531,863 = net imports Hk. taels 646,997,681. The exports were Hk. taels 630,809,411.

All this has not been accomplished without considerable effort on the part of the merchants and banks; and, as the author shows, the credit is in no small degree due to the early British pioneers who penetrated into the innermost parts of China in their endeavours to foster and to maintain trade between East and West.

The description in the book of how business is conducted makes most interesting reading, and will prove useful to those who contemplate entering into business relations with the Chinese. China is a land of contradictions; a great deal of trade is done solely by word of mouth, yet a Chinese merchant will prove time after time that his word is his bond, and knowing all this, Europeans in the East trust the Chinese and each other in business much more than is common in London or elsewhere. But, as the writer remarks, "it would be wrong to give the British manufacturer the idea that there is no such thing as a dishonest Chinese, because it is a fact that the contact with Europeans in the Treaty Ports has not been altogether to the advantage of commercial morality in China." In the circumstances, safeguards are necessary. The compradore system has received wide support. Most firms and banks of repute employ the compradore, a sort of Chinese guarantee broker, who acts as the connecting link between Europeans and the Chinese, and it is this go-between who takes upon his shoulders the responsibility for the transactions entered into with the Chinese.

It is a *sine quâ non* for European traders to use a "chop." A chop is the Chinese name for a trade-mark; and it is the chop which makes the goodwill of the old-established houses so famous in the East. In China, where the commercial machine is often clogged by mutual suspicion, and creaks along in the manner of centuries ago, the chop seems to have become indispensable. Every piece of silver that passes through Chinese hands is chopped by those who have handled it, and even bank-notes issued by the leading foreign banks are marked. The chop is the sign of the firm or man who has used the silver or note, and it is a guarantee

that the currency is genuine. Similarly, with goods and commodities, marked with well-known "chops," the Chinese know that they are what they purport to be, and there is an end to the matter.

One thing we learn from this book is that any one who wants trade in China has to pay for it. The British people, we are informed, are backward in throwing the sprat to catch a mackerel, but it must be done in China. Any firm that wants to reap the rich harvest of trade which China has to offer must be prepared to spend money in watering the soil. The thing must be well done if it is to be done at all, and the concern ambitious for China trade must be ready to spend money in the early years.

The language difficulty is shown to be not so insuperable as men often imagine it to be, but the book impresses upon the authorities in England the necessity for establishing some really inspiring and attractive school for the study of Chinese at home, not a school which will form the resting house for pensioned civil servants, but one with properly trained and energetic teachers. Every one seems to be agreed that if Great Britain is to obtain her share of trade with China, the study of Chinese must be encouraged, and it may be done by properly directed efforts not only in China, but also by the London School of Oriental Studies.

Mr. Smith has thoroughly grasped the fact that it is in railway civilisation we have to look for the real development of China; much has been accomplished in this direction, but a great deal remains to be done. As is probably well known, hitherto railways in China have been constructed in sections, one section being allotted to a British engineer, one to an American engineer, one to a French engineer, and so on. Such a system, though fairly successful, actually militated against forward progress. Now it is the declared policy of the new China Consortium to unify the whole railway system of China. It is part of their programme to abandon the sectional distinctions that have existed for so long, and to entrust the administration of the system as a whole to a Railway Board in connection with the Government Department of Communications in Peking. It is proposed that the Chairman of the Board shall be the Minister himself, aided by four Chinese colleagues and four engineers, upon whose expert advice and assistance he can rely.

In this review, of necessity, one has been able merely to touch upon the fringe of the many questions that have been raised by the author; what he writes on coal-mining and the exploitation of the mineral wealth of China will be studied with deep interest,

and those who are interested in the doings of British subjects in the outposts of China will find much food for reflection in those chapters dealing with Britons who have served China. The record of the achievements of Englishmen, Scotsmen and Irishmen, all really great men, is well described. The only fault from which the book suffers is in its arrangement. The author has tried to include too much in the compass of one volume, and the reading is apt to be " scrappy " in consequence. To be really valuable for economists such diverse subjects as are touched on in the book are best treated in separate volumes.

WILLIAM F. SPALDING

SOME RECENT FRENCH BOOKS

Traité élémentaire d'économie politique. Par BERTRAND NOGARO, Professeur d'économie politique à la faculté de droit de l'Université de Caen. (Paris: Giard & Cie. 1921. Pp. 598. 8vo. 30 francs.)

Cours d'économie politique. Par HENRI TRUCHY, Professeur à la faculté de droit de l'Université de Paris. Tome deuxième. (Paris: Sirey. 1921. Pp. 464. 8vo.)

Traité d'Économie Politique. Par MAURICE ANSIAUX, Professeur à l'Université de Bruxelles. Tome premier. (Paris: Giard & Cie. 1920. Pp. 389. 8vo. 20 francs.)

Le système monétaire et le change anglais depuis la guerre. Par ALFRED MAWAS, docteur en droit. (Paris: Giard & Cie. 1921. Pp. 406. 8vo.)

La Bourse des Valeurs de Paris pendant la guerre (1914–1920) *avec neuf graphiques hors texte.* Par MARCEL BOURBEAU, docteur en droit. (Paris: Librairie générale de droit et de jurisprudence. 1921. Pp. 384. 8vo. 25 francs.)

THE man in the street is generally ready with one suggestion for the tax-gatherer. He would fain impose a tax upon some luxury he is not inclined to; and this sentiment is so diffused that a plebiscite would probably result in an almost unanimous vote in favour of taxing new treatises on the Principles of Economics. It would be a sorry world if every classical master thought it incumbent upon him to bring out a new Latin or Greek grammar; and at a time when paper and printing are so expensive, and the public are compelled to limit severely their expenditure on books, it is intriguing to find that experienced

publishers are ready to put out book after book which merely tells us what others have said before and frequently have said better.

Possibly the French student who wishes to do well in his examinations is expected to swear in the words of his teacher and virtually compelled to buy his Professor's manual. If this be not the true explanation, the market for these new books must be so limited that the authors probably pay dearly for the pleasure of seeing their works in print.

Professor Nogaro has already published, under the title of *Éléments d'économie politique*, an epitome of the lectures which he has given to his classes. The present volume is an enlarged edition of the Elements with a different title. The author observes that he has been unable to devote himself to personal research into all the topics touched upon, and thinks it unnecessary to excuse himself for borrowing largely from classical authorities. Upon them the reviewer need not enlarge. The exposition is lucid and fairly complete in range, though somewhat thin. The references to leading authorities are superficial, and though the list of names is of formidable length we are told only of Jevons that he employed the language of mathematics, and of Seligman that the student may refer to his *Principles of Taxation*, which we should like to see. The section devoted to money and banking is the best portion of the book, but we look in vain for anything new in the treatise.

Professor Truchy's *Cours* is of a weightier character. His second volume deals with international economic relations, distribution of wealth, public finance, and social questions. It is a thoughtful and balanced statement of facts and theories. His underlying philosophy is that of the classical French economists, which is perhaps the beginning of wisdom in economics, but is certainly not its end. There are times and seasons when the easy optimism of free exchange and *laissez-faire* are as insufficient as trusting to the *vis medicatrix naturæ* and the patience cure when you are bitten by a mad dog. The assertion that the foreign exchanges cannot long remain unfavourable to a country, but must in time become favourable, will cause the reader to rub his eyes and read it again. The argument that if the dollar stands at 10 francs, instead of at its old parity of 5·18 francs, the American is buying French labour at a *vil prix* and the dollar is "a kind of tyrant," while the French exporter to America is receiving a subsidy of 100 per cent., omits the essential factor that the new franc differs in everything but name from the old

franc. The critic will find many passages against which to mark a note of interrogation, but he will also find a good deal that is useful and interesting, and will wish to keep the volume on his shelf.

Many of us remember the favourable impression made in 1892 by *La Question Monétaire en Belgique*, par Maurice Ansiaux. The young advocate at the Liége Court of Appeal has now become not only a Professor of Economics at Brussels, but *Conseiller de Gouvernment près le Ministère des Finances et Membre du Conseil Supérieur du Travail.* In this first part of his *Traité* he confines himself to the economic organisation of society. Competition and monopoly, trusts and syndicates, home-work, agriculture, commerce, railways and banking and financial concentration are the staple of the volume. The questions of value, wages, profit, interest, rent, etc., are apparently reserved for later treatment; the scientific kernel of the *Traité* has yet to appear. The description of economic organisation is well documented without being complete. If it were worth doing on this scale it would seem less out of place in a separate treatise than as part of a *Traité d'économie politique.* On its merits the volume may be said to contain many facts and figures, but few illuminating ideas except those which are already current.

The monograph by Dr. Mawas is the best we have yet seen upon its subject. The draft on London has been, is, and will continue to be, such a prime favourite in international trade that the English (or more strictly the London) exchanges are naturally selected as the centre from which to measure the fluctuations in currency values. The author expounds clearly the theory of foreign exchanges, and examines critically the views put forward by various writers since 1914 as to the causes of the perturbations experienced. He has the wisdom to reject the single cause solutions—that it is all a question of public confidence, or of the balance of trade, or payments, or the stock of gold in the country, or the mass of currency of all kinds, or the balancing of the budget. His examination of the limitations of the various theories leads him to the conclusion that a complex of interacting factors enters into the problem, but he endeavours to make clear the qualitative influence of each factor, and holds fast to the anchor of conviction of the truth of the quantity theory of the value of money, with a due appreciation of its limiting postulates. His desire to see a return to monetary equilibrium and to sound currency under cautious conditions is a pious aspiration widely shared; but hard work and hard living, hard money and hard

thinking, are more easily sighed for than attained. The descriptive part of the work is admirably done and shows both intimate and accurate knowledge of the action taken, the agents concerned, and the literature of the whole subject. The graphs at the end of the volume are particularly valuable.

Dr. Bourbeau gives us a luminous account of the Paris Stock Exchange during the war, its difficulties, its closing, reopening, restrictions and special regulations, and shows its working under trying conditions. He acutely observes that in many quarters the Stock Exchange is regarded as a luxurious excrescence of society which can be dispensed with in a great crisis without serious inconvenience, or possibly with advantage. Even those who think of it as a kind of weir into which stocks and shares can be poured, or out of which they may be drawn as desired, fail to perceive the great national utility which it possesses in common with banks and great finance houses of mobilising the resources of the country and of serving as a great reservoir of capital. The actual texts of the decrees and official letters regulating the Bourse since 1914 are set out, and the authorities are sharply criticised for lack of insight and narrowness of vision in crippling the Bourse to the disadvantage of public finance. The author offers proposals for reform of the Paris Bourse which we lack space to consider. They will repay study, and should receive serious attention in this country when the reform of our own Stock Exchange, long overdue, is taken in hand. The book is an interesting and useful contribution to the history of war finance.

HENRY HIGGS

NOTES AND MEMORANDA

The Ter Meulen Scheme

All those who have been long in public life know how situations arise in which the public expect " something " to be done to relieve the immediate need. Experts, understanding the difficulties better than the public can do, meet to devise a scheme and eventually produce something, rather in the hope that it will suffice to still the cry for the time being than that their scheme will prove a panacea.

This I should judge to have been the case in the proposal of the League of Nations to adopt the ter Meulen scheme of guaranteed credits for exporters. It has the merit of being perfectly simple theoretically. The governments in countries *aux finances avariées*, as Leroy Beaulieu used to call them, are to issue bonds in guarantee to the foreign exporters of the price of the imported goods. This is the scheme in a nutshell.

The League says that, under the scheme, " the exporter must still satisfy himself, as he does at present, about the standing and credit of his customer." But why should he, if the guarantee is good and liquid—that is to say, if it can be readily turned into money? It is the guarantor's duty to look into the solvency of the debtor, not that of the creditor. If a purchaser brings, for example, the guarantee of a good bank, the seller looks no further.

Everything, therefore, to the English exporter, depends on whether the bonds of the governments concerned—say the Austrian Government—would be a liquid asset.

When studying these questions, the first thing to understand is that, when we talk of " moving funds," " remitting or transferring money " from place to place, we are, scientifically speaking, talking nonsense. Almost as omnipresent as the ether, money is equally intangible. It eludes our grasp. It is where it is, and no one can take it in his hand and move it.

For money is debt, and the pieces of paper or metal which we guard with such care are not the money itself, but merely the

proof of its existence, if anything so ethereal can be properly said to have an existence—proof of its being, I would rather say.

Debt is immutably domiciled in the home of the debtor, and can no more be moved than a house. If you have a house in the country and want one in town instead, you cannot move your house to the town. All you can do is to exchange the house in the country for one in the town, or to sell the one and buy the other; and whether you can realise your desire depends on whether there is some one in the town willing to make the exchange, or whether there is some one willing to buy your country house and some one else willing to sell you his house in town. If you cannot sell your house, or if you cannot purchase one in the only town in which you wish to live, no transaction will take place.

And so it is with money. If a manufacturer in England sells to an importer in Austria, he obtains the price in money in Austria, and can by no means remove it. If he cannot exchange this money for money in England, whatever value it may have in Austria, it has none to him.

The question, therefore, that has to be decided by a manufacturer who might wish to make use of the League's scheme is whether he can sell Austrian bonds for money in England. To-day, I am informed, there is practically no market in London for Austrian bonds. The situation of a manufacturer who, under present circumstances, accepted the guarantee of Austrian bonds would be similar to that of one who should accept the guarantee of an individual who could not pay the guarantee money and whose effects might or might not be saleable. No manufacturer would accept such a guarantee. It is essential that a guarantor should be able to pay the guarantee on demand. To make the proposed bonds attractive, it would be necessary for Austria to accumulate a fund in London for the redemption of the bonds.

We now come to another point of equal importance. There is to-day practically no market for Austrian exchange in London, and the sale of a comparatively small amount of Austrian money —say £20,000—would, I am informed, appreciably affect the rate. It is evident, therefore, that if by artificial means it were possible to foster the export trade with Austria to an extent which would be of any value to British trade, the immediate result would be a further fall in the exchange, and the same effect would be produced should Austria try to accumulate sterling. The exporter, to cover himself, would have to draw on

Vienna in sterling, and the fall in exchange would cause the price of the goods to be higher than the importer bargained for. If, as would probably be the case in most instances, the prospective importer had already contracted to deliver the goods at a quoted price, he would be the loser.

From this dilemma there is no escape.

That the difficulties in the way were not underestimated by the experts of the League of Nations who visited Vienna and are chiefly responsible for the proposals made in the Report of the Finance Committee of June 15, 1921, is shown by the conditions laid down as the essential preliminary to affording their aid in the financial reconstruction of Austria. They are as follows :—

1. That all foreign countries shall agree to suspend their rights in respect of the expenses of the armies of occupation, claims for reparation, and Relief Credit bonds for at least 20 years.

2. That the Austrian Government shall take immediate steps to balance its budget, the deficit on which for the year 1920–1921 reaches the huge figure of 53,000,000,000 kronen. (The krone before the War was about equal to the franc.)

3. That the issue of paper money shall cease.

4. That, to help to realise 2 and 3, an internal loan shall be issued.

5. That a bank of issue shall be created with a capital of 100,000,000 francs, half to be subscribed in foreign countries. One of the main duties of the bank would be to take measures to maintain the gold value of the currency.

6. That a foreign loan should be floated; one of the principal objects being to obtain funds in foreign countries, to be used in conjunction with the bank's operations for stabilising the exchange.

Provided that these conditions are fulfilled, the League is prepared to authorise the issue of ter Meulen bonds as security for temporary credits. But their fulfilment presents formidable obstacles and the most sanguine temperament could hardly hope that, even if the whole scheme be ultimately carried through and prove successful in restoring Austrian credit, this could be done in time to meet the immediate needs of European commerce.

The issue of ter Meulen bonds appears to be intended to tide over the transitional period between the initiation of the scheme

of reform and its final success; but exporters could hardly be recommended to accept them until, at least, the reform had gone so far as to insure the saleability of the bonds, and this will not be at once. The Finance Committee of the League anticipates that at least two years will be required to balance the budget. If the Austrian Government can wipe out their enormous deficit in that time, it will be greatly to their credit.

Quite another aspect would be given to the ter Meulen scheme, from the point of view of British commerce, if the bonds could be used in conjunction with the export credits scheme of the British Government; if, that is to say, the government would agree to buy forfeited bonds and hold them for eventual sale or redemption.

All this presupposes, of course, that the governments concerned would be willing to pledge their credit for the sake of their importers, but financial history is not encouraging in this respect. Parliaments are often tender-hearted towards their manufacturers and exporters, but usually leave importers to shift for themselves.

It is to be noted that the delegates of the League do not consider that Austria requires any special credit facilities for the purchase of raw material and coal (*Report of the Finance Committee*, p. 28).

A. M. INNES

WAGE ARBITRATION IN NEW ZEALAND UNDER FALLING PRICES

THE New Zealand Arbitration Court has come to a critical stage in its existence. It was established in 1894 by the Liberal-Labour Party as one of their first measures of State Socialism, and was designed mainly to provide a system of compulsory arbitration in labour disputes which would reduce strikes to a minimum. The original Act (Industrial Conciliation and Arbitration Act, 1894) provided for permanent Conciliation Boards as a preliminary to the Arbitration Court which was presided over by a Judge of the Supreme Court, assisted by two assessors nominated by the Governor on the recommendation of Employers' Associations and Trade Unions.

It was, however, alleged by the employers, who at this time were mainly hostile to the Court, that the permanent members

of the Conciliation Boards fostered disputes, and in section 60 of the I. C. and A. Amendment Act, 1905, power was given by which either party could refer a dispute direct to the Court. The Conciliation Boards atrophied, and in a further amending Act (1908) three permanent Conciliation Commissioners were appointed to act as chairmen of Conciliation Councils formed *ad hoc* from persons who had been, or were at that time, engaged in the industry. This device, supported by the insistence of the Court that an honest effort be made to effect a settlement before an award of the Court is sought, has in practice worked well. The Conciliation Councils usually arrive at considerable agreement and narrow down the issues to be decided by the Court, which in its award incorporates the agreed conclusions. In the last resort, then, the system is one of voluntary conciliation, supplemented by judicial fixation of wages, and as such, the prestige of the Court has always depended primarily on the personality of the Judge.[1]

Awards of the Court are binding on all unions (whose membership must be fifteen or over) which have registered under the Act, but in practice a large part of the economic life of the Dominion is outside the purview of the Court. The main industry of New Zealand is pastoral farming, a great part of which is in the hands of medium-scale working farmers who depend on their own labour and that of their families. A dispute was once brought to the Court by the Farm Labourers' Union, but the Court refused an award.[2] In addition, several of the more militant unions, among them the Miners, Waterside Workers, Seamen and Freezing Works Employees—the leading members of the Alliance of Labour—have for years been hostile to the Court. The Miners went so far as to withdraw their registration under the I. C. and A. Act, and registered under the Trades Union Act. "Loyal" unions, however, were formed and registered under the I. C. and A. Act, and secured awards or agreements enforceable at law, so that the Miners were practically forced to join and swamp these unions. At present all the militant unions are registered; but they defy the Court in every way possible and some never appear before it.

From the militant unions which are vaguely syndicalist in their theory have come the strikes of recent years, including the

[1] There are many descriptions of the New Zealand system of arbitration; the fullest is Broadhead's *State Regulation of Labour and Labour Disputes*, written from the employers' point of view.

[2] See *Awards of Arbitration Court*, Vol. IX., p. 517.

big Waterside Workers Strike of 1913, and the various war-time and irritation strikes of the Miners.[1]

Within a limited sphere, however, the system inaugurated in 1894 can claim a fair measure of success. It has undoubtedly reduced industrial friction, particularly in the earlier years of its work. It has also provided a tribunal before which the circumstances of important industries can be fully and frankly discussed.

There has been no full and scientific inquiry into the influence of the Arbitration system on the general rate of wages; but at least one negative conclusion is clear, that the Court has not raised real wages. It has for many years done little more than register conservative estimates of the increase in money wages necessary to keep pace with the rising level of prices. In the nature of the case, moreover, wages are fixed for a term, some awards running as long as three years, so that with a constantly rising level of prices, labour is always at a disadvantage.

There has never been any definite pronouncement by the Court of the system upon which awards are decided. Apparently the main features of the award having been settled by a Conciliation Council, the issues still in dispute are decided by the Judge largely on opportunist grounds. What an industry can bear, what other industries have received, the skill with which a case is presented, the cost of living, and many other factors influence the decision.

The Royal Commission on the Cost of Living (H. 18, 1912) gave two estimates (pages xlix–l) of the changes in real wages between 1896 and 1907, the increase being given in one case 3 per cent., in the other 9 per cent. During the whole of this time New Zealand was extremely prosperous.

In 1919 a more elaborate analysis was made by G. W. Clinkard.[2] Although this thesis is based on rates of wages as disclosed in awards of the Court, rather than on actual earnings, there is no reason to suppose that the ratio between rates and earnings changed materially during the period covered, so that the comparative value of the figures is not affected. A table on page 909 of the Official Year Book (1919) calculates real wages as measured in Food-prices and Rents. Taking 1911 as base = 1000, the trend of real wages appears to have a general downward tendency

[1] The total membership of the registered unions at 31st December, 1919, was: Industrial, 82,553; Employers, 5,146; in all about 7½ per cent. of the population. The membership of the main militant unions was: Miners, 2,356; Seamen, 3,504; Watersiders, 6,673; Freezing works employees, 6,541.

[2] Published as an Appendix to the *Official Year Book*, 1919.

from 997 in the triennial period 1901–3 to 946 in 1916–18 (the last complete figures).

One is justified in asserting, therefore, that the general rate of real wages has not been raised by the Court even in a time of steady prosperity. This conclusion is in accord with general opinion, and is part of the reason for the antagonism of militant labour. The further conclusion that may be drawn is also widely held, viz. that of recent years there has been an actual decline of real wages. There is not sufficient evidence, however, to say whether the lagging of real wages is due to the Court, or not.

Though it has not succeeded in raising real wages, the Court has undoubtedly standardised them, both as between industries and as between employers within the same industry. There is no reason to believe that the minimum award rates have become the maximum. There is still a differentiation of wages in favour of the better workman, and it does not take the secret and underhand form described by Mr. Aves, who must have had his information from an employer who was hostile to the Court.[1] An investigation in Christchurch recently showed approximately 60 per cent. of the workpeople in receipt of wages above the award rate, and there are actually important factories in which task and bonus systems operate. The War Legislation and Statute Law Amendment Act, 1918, gave power (section 18) to the Court to take increases in the cost of living into account during the currency of awards, and on April 19, 1919, the Court made its first pronouncement under this authority.[2] After explaining that it would fix minimum rates and then announce periodic bonuses or reductions in bonuses, as the cost of living changed, the Court fixed the basic rates as follows : [3]

> Skilled workers, 1*s.* 7½*d.* per hour.
> Semi-skilled workers, 1*s.* 4½*d.*–1*s.* 6*d.* per hour.
> Unskilled workers, 1*s.* 3½*d.* per hour.

In the words of the Court " these wages are substantial increases, for the different classes of workers, upon the wages prevailing immediately prior to the war, and, to some extent, although not wholly, compensate the workers for the increases in

[1] Cf. Aves' *Report on Wages Boards*, p. 109, quoted by Pigou: *Economics of Welfare*, p. 433.

[2] *Book of Awards*, Vol. XX., p. 403.

[3] These rates carried a flat rate of bonus of 2½*d.* per hour over and above the basic rate, as compensation for the additional increase in the cost of living *since* the passing of the 1918 Act. This was the first of the half-yearly bonuses discussed below.

the cost of living up to the time of the passing of the recent Act."

A year later, on April 27, 1920, on the occasion of the announcement of the third bonus, the Court reviewed the basic rates in what is known as the Gisborne pronouncement and readjusted them as follows.[1]

> Skilled workers, 2*s*. per hour.
> Semi-skilled workers, from 1*s*. 8*d*.–1*s*. 10*d*. per hour.
> Unskilled workers, 1*s*. 7*d*. per hour.

The Court now holds to these rates for all industries, and the main source of disagreement in any dispute is the classification of workers concerned into the grades specified. So that in the strict sense of the word, New Zealand may be said to have a legal minimum wage.

Economic students have foreseen for some time that the test of the Arbitration Court would come when the rigid fixation of wages for a period failed to correspond with prices of other commodities and services. The test might come in one of two ways, either by the cost of living rising sharply and continuously over a period of years, or by a sudden turn of prices leaving the wages fixed at a level which was burdensome to industry. Both these conditions have occurred in a short space of time and the Court is feeling the strain badly.

As long as nominal wages were steadily increased, even though the rate of real wages was at least not rising, there was not much dissatisfaction with the Court. But with the sharp rise of prices due to war inflation the gap between nominal and real wages became too obvious, even during the currency of an award, and it was for this reason that the amending legislation of 1918 (referred to above) was passed, so that the Court could review and amend an award at any time. This the Court proceeded to do by fixing basic rates and announcing a bonus every six months, calculated on the moving average of the Government Statistician's index-number of retail prices of foods and rent, as a flat rate of pence per hour.[2]

The first bonus, announced on April 19, 1919,[3] was 2½*d*. per hour ; in November a further 1*d*. per hour was added, and the following April, at the time of the Gisborne pronouncement,

[1] *Book of Awards*, Vol. XXI., p. 513.

[2] The bonus was calculated on the basis of the semi-skilled workers' wage so that the unskilled workers gained a preferential treatment.

[3] *Book of Awards*, Vol. XX., p. 403.

another 3*d*. The cost of living continued to rise sharply, and in November 1920 another bonus of $2\frac{1}{4}d$. per hour (9*s*. per week) was announced.[1] But by this time it was becoming clear that the after-war boom was drawing to a close, and the employers offered a strenuous resistance to the granting of the latest bonus. The Court reconsidered its decision at a special sitting in Wellington early in December 1920. There was a fully representative panel both of employers and trade unionists, and evidence as to the financial outlook was given by the Chairman of the Bank of New Zealand. In the evidence of the Government Statistician it was made clear that in this and the preceding bonus an error of calculation had been made, the adjustment of which would reduce the bonus payable to 5*s*. per week ($1\frac{1}{4}d$. per hour). The Court decided to revoke its pronouncement, grant a bonus of 3*s*. per week ($\frac{3}{4}d$. per hour) and carry forward 2*s*. per week.[2]

When the next bonus fell due early in May 1921, it appeared that with the 2*s*. carried forward, a bonus of 5*s*. should be granted. But in the meantime the slump had occurred in real earnest and the war prosperity had given way to the anxiety of a severe crisis. To many people the first indication of financial trouble came when the first wool sale of the season was a fiasco; but a severe financial stringency was rapidly developed. The high price of butter and the guaranteed price of wheat alone saved the farming community from serious disaster. As it was, the crisis disclosed in the country a bad inflation of land values and in the town serious over-importation and increases of stock.[3]

Under the circumstances, Mr. Justice Frazer, with the concurrence of both his colleagues (representing the labour unions and the employers), announced a scheme for the stabilisation of wages for the ensuing twelve months, under which the bonus falling due was withheld, and the promise was made that it should be offset against the prospect of wage reductions.[4]

Although the bonuses had not effectively countered the rising cost of living even as measured in food-prices and rent,[5] they had been effective in allaying unrest, and the withholding of the bonus was strongly resisted by the Trade Unions. An appeal was made to the Court to reconsider its decision, but this the

[1] *Book of Awards*, Vol. XXI., p. 2103.

[2] *Ibid.*, Vol. XXI., p. 2233.

[3] The imports for 1920 were £61,595,828, as against £30,671,439 in 1919.

[4] *Book of Awards*, Vol. XXII., p. 804.

[5] Food prices in New Zealand did not rise as much as the prices of imported goods such as clothing, being controlled by Government commandeer. The calculation of rents by the Government Statistician is very conservative and based on inadequate data.

Court refused to do.[1] In this decision all three members were unanimous, and in the published pronouncement it was definitely agreed that the basic rates of wages were to be stabilised for a year. As some doubt had existed of the Court's power to fix wages for such a long period ahead, a proviso had been added to the original pronouncement, carefully worded as follows :—

" It is not intended to take away the right of either party to an award or industrial agreement to make application to the Court under the existing legislation; but the Court will require proof of extraordinary circumstances before departing from the principles herein laid down, unless the parties agree to a modification." [2]

This proviso proved a source of serious difficulty very quickly.

The stir occasioned by the stabilisation scheme had hardly died down when the shearers' dispute brought a new difficulty. It should be noted that the great bulk of the trades which are regulated by the Court are those of the town which are in New Zealand commonly and significantly called " secondary." Many of the industries affected are protected by the tariff, and indeed a common argument for protection is that it should be regarded as a complement to the internal protection of labour laws. Any increase in the costs of production therefore can be passed on, and ultimately must find its way on to the shoulders of the landowners, who in New Zealand are mainly small farmers.

But the rural industries producing for a world-market cannot pass on increased costs by raising their prices to any extent, and when the shearers, in face of a drop in wool prices to approximately pre-war levels, came to the Court and asked for an increased piece-rate of wages, the Sheepowners Federation simply returned a *non possumus*.

The professional shearer in New Zealand is a nomad, often of Australian origin, who works through the sheds of Australia and New Zealand from north to south on a regular annual round. But there is a fluctuating reserve of labour in the ranks of the small farmers, and many Maori shearers, though extremely efficient and nominally members of the union, are not greatly in sympathy with the more aggressive unionists.

The Court disagreed, the employers' representative arguing that no award should be made and the labour representative standing firm on the Court's stabilisation scheme. The Judge made an award which involved approximately a 20 per cent.

[1] *Book of Awards*, Vol. XXII., p. 938.
[2] *Ibid.*, Vol. XXII., p. 804.

reduction of wages, on the ground that "extraordinary circumstances," in terms of the Court's reservation, existed in the industry.

The labour representative (Mr. J. A. McCullough), who had held office since 1908, resigned as a protest against what he considered to be a breach of agreement; a view of the case which was strongly contested by the other two members. The Shearers' Union is attempting to disregard the award, but there is some unemployment in New Zealand, and the small farmers will in many cases shear their own sheep. The Maori shearers, too, "as loyal citizens" intend to obey the award.

In the meantime the Trade Unions are divided in their attitude to the Court. The leaders of the Alliance of Labour urge that "the whole caboose should be knocked on the head." Mr. McCullough at first refused re-nomination absolutely, but a great majority of the unions proceeded to nominate him as an endorsement of his protest. His deputy announced his candidature in view of Mr. McCullough's refusal, but was not supported. Such a position was playing into the hands of the Court's opponents, until Mr. McCullough was persuaded "to hold the fort for a time until a successor can be appointed free from the present excitement."

It appears, therefore, that the testing of the Court has begun and will be severe. In the past it has if anything kept wages back; it would probably act as conservatively in a time of falling prices. But the distinction between nominal and real wages is not clear to the wage-earner, and, moreover, prices move unequally, so that a manufacturer's product may, and probably will, fall before the cost of living comes down. The Court's awards would probably operate to prevent wages following the former rather than the latter; but reductions in wages of any sort are unpopular, and there is an active minority of the labour movement which views the Court as a mere Capitalistic device, and which will therefore be glad of any opportunity to undermine it.

J. B. CONDLIFFE

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THE BRITISH ASSOCIATION MEETING AT EDINBURGH

The British Association met at Edinburgh, September 7–14, Section F being presided over by Mr. W. L. Hichens of Cammell,

Laird & Co., who gave an interesting address on the *Principles by which Wages are determined.* Its main conclusions were, that no simple practical method exists for the division of the proceeds of industry between Labour and Capital. Profit-sharing and similar schemes are no solution of the problem. In the determination of wages we must hope for a wider knowledge on both sides of economic forces and conditions, and to a greater measure of good-will, and in cases of active dispute to a more frequent adoption of arbitration.

The Section held a joint meeting with Sections J and L to discuss *Vocational Training and Tests*, at which Miss Grier spoke of their application in the case of the labour of women and girls, and Sir William Beveridge briefly traced their relationship to some of the economic problems of the present time.

Professor Macgregor showed what light the most recent inquiry has thrown upon *Trusts :* Sir Josiah Stamp, in a paper which was printed in the September issue of this JOURNAL, considered the *Taxable Capacity of a Country*, especially as exemplified by Ireland, and Miss E. F. Stevenson dealt with the *Economic Theory of Public Expenditure.* The remainder of the papers were devoted to the two subjects of wages and money. Miss G. Jebb contributed *Cost of Living Sliding Scales*, Mr. A. A. Mitchell *The Breakdown of the Minimum Wage*, Mrs. Barbara Wootton *Self-supporting Industries ; an Inquiry into the Principle of Regulating Wages and Provision against Unemployment in Accordance with Industrial Capacity*, Dr. Mary Rankin *The Element of Compulsory Arbitration in Recent Industrial Legislation*, and Professor Kirkaldy *The Wages System and Possible Developments*, in which he suggested that harmony might be attained by the introduction of a system under which workers would be graded by an authority constituted for the purpose. Mr. A. H. Gibson, in *An International Standard of Value*, put forward a scheme for an international bank of issue which would regulate the amount of its notes outstanding by varying the rate of interest in accordance with the variation of general prices. This was criticised on the ground that it seemed to propose further additions to the existing currency of the world, and that the present time is unfavourable for the international regulation of currency. Professor Nicholson, in *Deflation*, cudgelled the inflationists. The part of his thesis which found least acceptance was that in which he seemed to reject altogether the " greater pressure of the National Debt " argument. Professor Cannan in *The Application of the Theoretical Apparatus of Supply and*

Demand to Units of Currency (printed in this number of the ECONOMIC JOURNAL) endeavoured to show that currency is no exception to the general rules of value, and to explain why the elasticity of demand for a rapidly increasing currency eventually falls below unity.

The Report of the Committee on the effects of the War on Credit, Currency, Finance, and the Foreign Exchanges consists largely of answers given by experts to a well-constructed questionnaire—answers often instructive and characteristic. Thus, in reply to the question: "Is the expansion of credit the cause or the effect of the expansion of the currency?" Professor Cannan replied: "There has been no expansion of credit when you measure credit in an undepreciated standard." Mr. Bernard Shaw says: "The two are really the same. Credit is one of the economic phantoms." To the question, "Was it possible in this and other countries to prevent the expansion of credit and currency?" Sir Josiah Stamp replies: "Theoretically, Yes, but psychologically, No." Mr. Hirst replies "Yes" without qualification. The Report of the Committee on Currency and the Gold Standard, which is published independently by its authors, will be noticed in a future number. The discussions were as usual for the most part too amateurish, the number of professional economists present being small and consisting chiefly of officers of the Section, who have business to attend to, and of readers of papers, who are naturally a little shy of vigorous criticism of each others' efforts. But the meeting was a pleasant one, and it is hoped that next year the more central situation of Hull and (perhaps) lower railway fares will enable a larger number of young teachers to attend. Gatherings of workers in different places, such as that which Professor Nicholson arranged at his house on the Sunday afternoon, indirectly promote the "advancement of science" as much as many "papers."

RECENT OFFICIAL PAPERS

Minutes of Evidence of the Committee Appointed to Inquire and Report on the Assistance which can be given by Women in the carrying out of Police Duties. [Cmd. 1133.]

Report of the Committee on the Employment of Women on Police Duties. [Cmd. 877.]

In thickly populated areas there is urgent need for the employment of policewomen. They should be invested with the legal powers

and status of a constable, their duties being defined so as not to include necessarily the exercise of physical force with consequent danger. On the basis of "comparative worth to the community," the normal standard of pay to the women should be somewhat lower than that of the men. But it should be open to a police authority to pay equal rates to the women it employs if their work is proved to be of equal value.

Report on Pottery (Profiteering Acts, 1919–1920). [Cmd. 1360.]

An interesting feature of the trade is the National Council under which the employers have undertaken to disclose the average profits on turnover and the average wages, so that the employed shall know the real facts relating to the industry.

Report on Conciliation and Arbitration, 1920 (Industrial Courts Act, 1919, and Conciliation Act, 1896). House of Commons, 195.

Census of England and Wales, 1921. Preliminary Report. [Cmd. 1485.]

The population of England and Wales, as numbered June, 1921, was 37,885,242, the largest number on record; but the increase, 1,814,750, is but half what it was for the previous intercensal period, and the rate of increase is the lowest on record.

Final Report of the Royal Commission on Wheat Supplies. [Cmd. 1544.]

OBITUARY

Sir Ernest Cassel

Though the newspapers gave generously of their space to obituary notices of Sir Ernest Cassel, his death must have seemed, to the older generation, to have excited a far less intense interest than it deserved. He has been described by an eminent American banker as "the greatest financier who ever lived," but he has apparently left the impression of a man who mysteriously acquired an inordinate amount of money, a small part of which he spent without success on the turf and a larger part in munificent charities.

In fact, his career seems to have been more important than his fortune; for it showed the sort of contribution a man of genius in finance can make to the economic development of even the older countries. It lasted, so far as the City was concerned,

from 1870 to 1910. At the end of that time he retired from active business, having begun with no capital and finished with about eight million pounds. And it is characteristic that when his will was proved ten years later, after he had given another million to social objects, and after a period of great depreciation in investments, it was proved for six millions.

He came to England from Cologne before he was twenty, and soon found his way to the firm of Bischoffsheim and Goldschmidt. Mr. Bischoffsheim's considerable abilities naturally included the power of justly estimating other people. Thus when Baron Hirsch, then a prince of Continental finance, asked him how best to enforce a claim against the Turkish Government for building the Oriental Railway, the advice was, "Send for my man Cassel." The Baron had expected something more impressive, but he took the advice and got his money. Thereafter Cassel was on the road, and clever constructions and reconstructions in Sweden and America, North and South, brought him into the Egyptian field with a reputation for making money and a small but strong and loyal group of associates all over the world. In Egypt the necessities of an effete government enabled him to get control of a certain amount of land which, if history and the analogy of not distant countries were to be trusted, would increase in wealth if it were given a chance. Personalities made his task difficult, but "Windsor Cassel" had all that knowledge of personalities which was necessary for him. He used it, however, only to promote a plan sound in itself. Thus he combined the investor's desire for bonds and preference shares at a time of cheap money with the potential wealth of a neglected but historically rich country; Egypt was irrigated for ever and the £5 Deferred Shares of the Daira Sanieh Co. changed hands at £900.

His subsequent activities contributed to the strength of many banks and other enterprises which now play a useful part. In the *Directory of Directors* he appeared only as a trustee for Egyptian Government Irrigation Certificates; but he maintained a sort of control over a number of first-class undertakings through nominees on their boards. It may be worth while to discuss his methods in the light of the American estimate of him quoted above. He never made, or wanted to make, the mistake of trying to sell to the public something in which he did not himself believe. He tried to discover concerns or countries the wealth of which could be increased by association with new capital in a new way. Having found for them a relatively small amount

of fresh capital himself—with his friends—it was usual for him quite soon to make a public issue bearing a fixed but high rate of interest, and not carrying strong voting power. Thus he was quickly liquid again himself, and the holder of Deferred shares in some form or other. His judgment being very good, the public usually got the interest for which they had bargained, and when his bigger plans matured, did not grudge the greater share of profits which fell to him.

Thus by good judgment, great quickness and energy, willingness to let other people make money, and the rare courage which enables a man to keep his resources always liquid, he made by himself one of the great fortunes of the nineteenth century, made it as a British citizen, and not out of the losses of others. He neither despised nor appeared to despise so rare a success; for the great appreciate greatness, and there had been nothing small in his career. But as victory followed victory, the issue of the other, secret, battle appeared always more like defeat. Family losses greatly afflicted his kind and patient heart. The war confirmed and deepened his inner melancholy.

CURRENT TOPICS

THE Political Economy Club, founded in 1821 by the exertions of Thomas Tooke (author of *The London Merchants' Petition*), with the co-operation of Malthus, Ricardo, James Mill, and others, celebrated its centenary on November 2. Lord George Hamilton presided over the celebrations, supported by many members of the club, and the guests included the President of the Board of Trade, Lord Haldane, Lord Ernle, Lord Askwith, Mr. Hilton Young, Sir Maurice de Bunsen, Sir Charles Addis, Sir Donald Maclean, Sir Frederick Macmillan, Mr. Henry Bell, and the Hon. George Peel.

Letters of congratulation on the Club's services to the advancement of Economic science from the American Economic Association and others were read. The question, " What has been the character of the services of the Club in the past, and what could be the scope of its activity in the future? " was opened by Prof. Sir W. Ashley, and those who took part in the discussion, in addition to Lord George Hamilton, were Sir Bernard Mallet, Lord Ernle, Mr. J. M. Keynes, Mr. Stanley Baldwin, Lord Haldane, Sir Hugh Bell and Professor Andréadès.

We note with pleasure that the Laveleye Prize has been awarded to Dr. Alfred Marshall. This is a quinquennial prize bestowed on some distinguished publicist for having made important progress in political economy and social science. The jury, appointed by the Royal Academy of Belgium, looks to the *ensemble* of an author's works, without regard to his school or nationality. The friends and admirers of Laveleye who founded the prize after his death preferred this form to one which would encourage youthful aspirants to compete in the production of prize essays. It was thought that the memory of Laveleye would better be perpetuated by connecting his name with that of some savant of world-wide reputation. This purpose has certainly been achieved in the present case. The grounds on which Dr. Marshall has been selected for this honour are ably stated in the report of the jury, containing an appreciative estimate of Dr. Marshall's work. Professor Mahaim acted as secretary and reporter for the jury; Count Goblet d'Alviella was president; and the other members of the jury were the Right Hon. A. J. Balfour, M. G. de Greef, Baron Descamps, Professor Charles Gide, and Mr. Seebohm Rowntree.

A correspondent writes:—"Prof. Knut Wicksell was born on the 20th of December, 1851, and will therefore attain the age of 70 on that date this year. His birthday will not pass unnoticed among Swedish economists, among whom he is revered as the G.O.M. of the science. His contributions fall into two more or less separate categories. In his theoretical work he is an eminent representative of the Austrian school, the ideas of which he has brought into a more complete body of doctrine (*Über Wert, Kapital und Rente*, 1893, *Vorlesungen über Nationalökonomie auf Grundlage des Marginalprinzipes*, 1913, etc.). Perhaps even more important are his contributions to the theory of money, in which he works out the quantitative theory for systems of credit and paper money, and for the first time, perhaps, in his generation shows the all-pervading influence of the rate of interest upon the value of money and upon crises. One of his Swedish colleagues, Prof. David Davidson, has shown how close a resemblance this theory bears to ideas enunciated by H. Thornton in *An Enquiry into the Nature and Effects of the Paper Credit of Great Britain* (1802). Wicksell, however, had worked out these ideas quite independently, without any knowledge of Thornton's book, and brought them to a consistent whole

(*Geldzins und Güterpreise*, 1898, *Vorlesungen*, Vol. II, which will appear soon, containing his ideas in mature form, published earlier in Swedish). Though he wrote mainly in Swedish or German, Wicksell's genius may be considered thoroughly English. Adam Smith, Malthus and Ricardo have been interpreted by him with the utmost devotion and insight. His name has appeared in the ECONOMIC JOURNAL from time to time as contributing to the discussion of important topics. Wicksell held the Professorship of Political Economy in the University of Lund, S. Sweden, from 1899 until his retirement in 1916, and is living now in Stockholm, where he has been constantly occupied in Government work connected with the Inland Revenue Department and the National Bank of Sweden."

At the invitation of the Government of India, Mr. J. M. Keynes is acting as Vice-President of the Indian Fiscal Commission lately appointed. He will proceed to India at the end of January and will be absent from this country for about three months.

M. Ernest Mahaim, Professor of the University of Liége and the correspondent for Belgium of the Royal Economic Society, has been appointed Minister of Industry, Labour and Supply in the new Belgian Cabinet.

The Evans Prize of £100, offered through the Cobden Club for the best essay on "The Wisdom or Unwisdom of Restrictions on the Exportation and Importation of Gold," has been divided between Miss W. A. Elkin and Miss E. Van Dorp, to whom, out of eighteen competitors, it has been awarded by the examiners, Professor Edwin Cannan and Dr. James Bonar.

Miss Elkin was a student at Newnham, and took a First Class in both parts of the Economics Tripos at Cambridge. She has done much work in connection with the relief of the famine areas, and was for some time secretary of the "Save the Children Fund." Miss Van Dorp is a Doctor of Law and a lecturer at the University of Utrecht; and a contributor to the *Economic Journal*.

RECENT PERIODICALS AND NEW BOOKS

The Edinburgh Review.

OCTOBER, 1921. *Labour and the League of Nations.* SIR LYNDEN MACASSEY. The International Labour Organisation should be more widely known; and might be much improved. The activity of rival "Internationals" excites the fear that "Geneva will become merely a stage on the roundabout road to Moscow."

The Fortnightly Review.

SEPTEMBER, 1921. *The Economics of Communism.* J. A. R. MARRIOTT, M.P. A reply to the Marxian arguments of Mr. Gould (in the JULY number) is pointed by the results of the Russian experiment.

NOVEMBER, 1921. *Prices and Productivity.* H. H. O'FARRELL. A vigorous attack on the position that deflation is inconsistent with productivity. *Unemployment, its Cause and only Cure.* J. ELLIS BARKER. A criticism of the Government proposal.

The Nineteenth Century.

SEPTEMBER, 1921. *The Bolshevist Food System.* MRS. HAROLD WILLIAMS. The essence of the Bolshevists' policy is the Communist system of production and distribution resulting in starvation. *The Industrial Crisis and the Remedy.* C. W. MACARA. The crisis is aggravated by the meddling of politicians; among remedies is the application to all industries of some such scheme as that of the cotton-spinners, under which the employed are entitled to ascertain the earnings of the industry. *The Nation and Finance.* SIR HENRY CRAIK. The plight of the middle classes requires a check to Government expenditure. "We can no longer afford a Labour Department which demands an annual revenue of £20,000,000 for work, the utility of which is at best problematical; which busies itself in fussy interference with matters which would be much better left to private bargain."

The Round Table.

SEPTEMBER, 1921. *National Prosperity and Industrial Peace.* A well-balanced argument shows that "the present state of affairs is partly due to the callousness and greed of a great part of Capital," and partly to "the hatreds and the false economics of a great part of Labour." The remedy is a change of attitude on both sides.

The Banker's Magazine.

MAY, 1921. *The Possibility of Forecasting Rates of Interest.* F. G. PEAKE. Observations of the Money Market from 1882 to 1913 show a correlation of above +·5 between (*a*) the difference between the rate of interest on floating money and the rate of discount on three (or six) months' Bank Bills, and (*b*) the rises and falls in the floating rate during the three (or six) months following the date of the quotations referred to in (*a*) (the prospect of (*b*) having presumably influenced (*a*)).

AUGUST. *The Relationship between the American and French Exchanges and the Rates of Interest and Discount.* F. G. PEAKE. There is a correlation of —·42 between (*a*) the average annual value of the sovereign in dollars for the years 1882–1913, and (*b*) the rate for floating money (and also the rate for discount of three months' Bank Bills) in London. The average annual rates of exchange between France and the United Kingdom do not show any such relations with the rates of interest and discount in London. The monthly average for the period also present interesting relations.

SEPTEMBER. *On the Prices of Commodities.* E. G. PEAKE. From Sauerbeck's statistics for 1850–1910 there are elicited correlations averaging +·59, between the yearly index numbers for several groups of commodities (*e. g.* between the *textile* group and that of *vegetables* + 60, between *textiles* and *minerals* + 51). The average percentage variation of the index numbers from year to year are different for different commodities; *e. g.* (1850–1880) potatoes 18·300, 4·4 for beef.

International Labour Review (Geneva).

JULY–AUGUST, 1921. *The International Labour Office and the Protection of Children. Labour Legislation in France during and after the War.* ROGER PICARD. *The British Industrial Court.* SIR WILLIAM MACKENZIE (President of the Court).

The Labour Monthly.

AUGUST, 1921. Vol. I., No. 2. *The World Economic Situation.* L. TROTSKY and E. VARGA. A gloomy and inflammatory tirade. There is anticipated a new, a "genuine," world-war, with consequences compared with which "the present state of Europe might be regarded as the height of well-being." It is admitted that "the struggle of the proletariat for power has been temporarily checked and its *tempo* delayed." But revolutionary communism will ultimately prevail.

The Quarterly Journal of Economics (Cambridge, Mass.).

AUGUST, 1921. *Generating Cycles reflected in a Century of Prices.* H. L. MOORE. Cycles of approximately eight years in the yield per acre of British crops may be traced during the last 160 years. *Fundamental Problems of Federal Income Taxation.* T. S. ADAMS. Sur-taxes, income-tax on corporations, the business tax, the relative claims of simplicity and equity are among the topics handled. *The Measurement of Changes of the General Price Level.*

ALLYN A. YOUNG. An expression agreeing with Prof. Irving Fisher's index-number is evolved. *Reciprocity with Canada.* H. S. PATTON. *The Shifting of Taxes on Sales of Land and Capital Goods and on Loans.* H. G. BROWN. *Reorganisation of Instruction in Finance.* W. H. LOUGH. *Unit Costs as a Guiding Factor in Buying Operations.* G. E. PUTNAM. The packer's system of cost accounts is typical of what is, or should be, the practice in other industries.

The American Economic Review (Cambridge, Mass.).

SEPTEMBER, 1921. *The Movement of Real Wages, 1890–1918.* PAUL DOUGLAS and FRANCES LAMBESSON. The commodities received by the American workman for an hour's work was at the end of the War from 10 to 20 per cent. less than in the decade 1890–1899, from 7 to 17 per cent. less than in 1916. *Recent Developments in the Federal Farm Loan System.* GEORGE E. PUTNAM. Referring to the decision of the Supreme Court, February 1921. *Railway Service and Regulation in Port Terminals.* C. O. RUGGLES. *Family Budgets and Wages.* MARGARET L. STEDIER. The use of Budgetary Studies for the measurement of cost of living and adjustment of wages presents serious difficulties. *Changes in Discount Rates of Federal Reserve Banks.* ANNA YOUNGMAN.

The Political Science Quarterly.

SEPTEMBER, 1921. *The Problem of Railway Control.* EMORY R. JOHNSON. "The railroads, waterways and highways . . . should be so co-ordinated that they will together form a physically unified transportation system." *Unemployment Relief in Great Britain.* C. H. NORTHCOTT. "Insurance against unemployment will come to be considered as rational and desirable as life and fire insurance." *The Bank of England and the Money Market.* J. E. NORTON. The Bank has now less control over the supply of credit than formerly.

Journal of Political Economy (Chicago).

OCTOBER, 1921. *The Economics of American Penology.* H. E. BARNES. Referring to the prison industries of Pennsylvania.

The Review of Economic Statistics (Cambridge, Mass.).

AUGUST, 1921. *The Position of Gold.* JOSEPH KITCHIN. In view of checks to the production of gold it is predicted that the average output for the next decade will be about £70,000,000 per annum.

SEPTEMBER. The usual monthly survey of general business conditions is followed by a study on World Banking Currency and Prices, 1920–21. A return to pre-war prices is regarded as very improbable. At some height between the previous and the present levels the trend of prices is likely to be horizontal or moderately descending for several years.

OCTOBER. *The Readjustment of Operating Expenses.* MELVIN T. COPELAND. There were wide divergencies in the sales at which the various items of expense and selling prices increased in several shoe factories. Operating expenses followed the fluctuation in receipts from sales very closely in several businesses.

Journal des Économistes (Paris).

OCTOBER, 1921. *La réforme sociale et les Finances britanniques.* Y. GUYOT. *Les assurances sociales obligatoires.* G. DE NOUVION. *Les prix et les salaires en Angleterre de* 1914 *à* 1920. A. RAFFALOVICH.

Revue d'Économie Politique (Paris).

JULY–AUGUST, 1921. *Théorie des banques.* J. LESCURE. *Les idées des "narodniki" russes.* J. DELEVSKY. This sect hold that the socialistic destinies of Russia differ from those of capitalist Europe and need not develop on Marxian lines. *L'idée de loi naturelle dans la science économique.* P. STRUVE.

Weltwirtschaftliches Archiv (Jena).

JULY, 1921. *Kräfte in der deutschen Industriewirtschaft.* DR. H. BECKERUTH. *Die holländischen Kolonien und der Freihandel.* DR. J. C. KIELSTRA. *Die Enstehung der englischen Währung.* DR. K. SINGER. *Das wesen . . . des Bank kredits.* DR. L. V. BORTKEWICH.

Zeitschrift für Volkswirtschaft und Sozial-politik (Vienna).

NEW SERIES. Vol. I. PARTS 4–6. *Carl Menger.* J. SCHUMPETER. An appreciative study on the work and scientific character of the great Austrian economist. *Die sozial-ökonomische Kategorie der Wertes.* DR. HERO MUELLER. *Stabilisierung oder Valutahebung als Ziel der Währungsreform.* E. H. VOGEL. *Die Bedeutung der Warenbörsen für den wirtschaftlichen Wiederaufbau Oesterreichs.* R. BRICHTA. Proposals for reviving Austrian trade.

De Economist (La Hague).

OCTOBER, 1921. *Malthus.* L. A. RIES. This article concludes a study of the Malthusian doctrine, dealing with the decline of the birth-rate and other aspects of the subject in the light of numerous authorities.

Giornale degli Economisti (Rome).

AUGUST, 1921. *Sulla rilevazione statistica del movimento dei forestieri.* R. BACHI. On statistics of temporary residence. *Interno alle pressione di qualunque imposta a parità di prelievo.* G. BORGATTA. On the pressure of different kinds of taxes (referring to an article in the July number). *Il prezzo del pane in Matelica nel secolo XVII.* M. BOLDRINI.

SEPTEMBER, 1921. *Un caso di protezionismo marittimo a Rovescio.* E. CORBINO. *La discriminazione qualitativa fra ricchezze soggette ad imposta.* S. ONETO.

La Riforma Sociale (Turin).

JULY, AUGUST, SEPTEMBER. *L'inchiesta sul controllo operaio.* The results of a *questionnaire* circulated by the *Riforma* concerning the control of factories by the workpeople.

Metron (Padua).

SEPTEMBER, 1921. Among articles which specially concern the economist is that of LUCIEN MARCH on the modes of measuring the general movement of prices, clearing up the confusion between the budgetary and the monetary index: "Dans le calcul de l'indice monétaire, il est inutile de faire intervenir les quantités." PROFESSOR C. GINI writes on the war from the point of view of eugenics. The increase in the proportion of male births during the war observed in this country by our Registrar-General and observable among other belligerents is attributed by L. SAVORGNAU to a longer duration between conceptions. There are other papers of great statistical interest.

Revista Nacional de Economia (Madrid).

VOL. X., NO. 29. *La organización de los transportes en España.* ANDRÉS BARTHE. *Proyectos de reforma monetaria en Europa.* G. ZOTTER.

NEW BOOKS.

English.

ATKINSON (MEREDITH). Australia: Economic and Political Studies. By various writers. Edited by M. Atkinson. Melbourne: Macmillan.

BRAND (HON. R. H.). War and National Finance. London: Arnold. 1921. Pp. xii + 287. 15*s.* net.

[To be reviewed.]

British Year-Book of International Law, 1921–22. Second Year of issue. London: Frowde. Pp. 272.

[Since the publication of the first volume the Year-Book has been affiliated to the British Institute of International Affairs. Sir Erle Richards leads off the second volume with an article on the Permanent Court of International Justice.]

CARPENTER (CHARLES). Industrial Copartnership. With Chronological Notes on British Profit-Sharing and Copartnership. London: Copartnership Publishers. 1921.

COHEN (J. L.). Insurance against Unemployment. With special reference to British and American conditions. London: King. 1921. Pp. 536.

COMMONS (JOHN R.). Industrial Government. London: Macmillan Co. Pp. 423. 17*s.*

COPLAND (D. B.). Currency and Prices in Australia. The Joseph Fisher Lecture on Commerce. Adelaide: Hassell. 1921. Pp. 44.

COUSENS (H.). A New Policy for Labour. London: Palmer. Pp. 110. 5*s.*

[Contains an introduction to the proposals of Major C. H. Douglas for the democratisation of credit.]

DRYSDALE (C. V., D.Sc.). The Malthusian Doctrine and its Modern Aspects. London: The Malthusian League. Pp. 68.

[A series of articles contributed to *The Malthusian* during 1916 and 1917 by the editor of that organ.]

DRYSDALE (C. V., D.Sc.). Wages and the Cost of Living. London: The Malthusian League. Pp. 48. 6*d*.

[A paper written for the Economic and Statistical Section of the British Association at Birmingham and rejected by them is now reprinted.]

GIDE (CHARLES). Premières Notions d'Économie Politique. Paris: Michel. Pp. 177.

[Beginning with the labour of insects and the capitalisation practised by dogs, the eminent economist presents clearly "*aperçus* on the origin and evolution of primordial sociological notions."]

FORRESTER (R. B.). The Cotton Industry in France. (Gartside Reports.) With an Introduction by D. H. Macgregor. Manchester: University Press. 1921. Pp. 142.

[The author is Lecturer in Political Economy in the University of Aberdeen.]

GILCHRIST (R. N.). Principles of Political Science. London: Longmans. 1921. Pp. 799.

GREGORY (T. E. G.). Tariffs: a Study in Method. London: Griffin. 1921. Pp. 518.

[To be reviewed.]

HALSTEAD (R.). The Producer's Place in Society. Manchester Co-operative Union. 1921. Pp. 48. 1*s*.

[Increased control of industry by the workers will be attended by many blessings.]

HAWTREY (R. G.). The Exchequer and the Control of Expenditure. (The World of To-day.) London: Milford. Pp. 72. 2*s*. 6*d*.

[To be reviewed.]

HISCOX (W. J.). Factory Organisation and Practice. London: Pitman. Pp. 214. 8*s*. 6*d*.

JEVONS (H. STANLEY). The Economics of Tenancy Law and Estate Management. A course of public lectures delivered in the University of Allahabad. Allahabad: University. 1921. Pp. 114. R. 1·8.

JONES (ROBERT), D.Sc. Taxation, Yesterday and To-morrow. London: King. 1921. Pp. 147.

KIRKALDY (A. W.). British Finance during and after the War, 1914–21. Being the result of investigations and materials collected by a Committee of Section F of the British Association. Co-ordinated and brought up to date for the Committee by A. H. Gibson. Edited by A. W. Kirkaldy. London: Pitman. Pp. 474. 15*s*.

[The mass of information embodied in the four reports of the Committee are here co-ordinated and brought up to date by Mr. A. H. Gibson. He adds some interesting reflections. If Government had conscripted the factors of production for war materials, expenditure might have been reduced by a half. A similar reduction might have been effected if the Government had refrained from the policy of credit expansion. It is doubtful if any country has gained by a policy of inflation.]

KIRKALDY (A. W.). British Labour Replacement and Conciliation, 1914–21. Being the result of conferences and investigations by Committees of Section F of the British Association. Co-ordinated and revised by Miss A. Ashley. Part II.: On Conciliation. Edited by A. W. Kirkaldy. London: Pitman. Pp. xxxv + 266. 10*s.* 6*d.*

MCDOUGALL (WILLIAM). National Welfare and National Decay. London: Methuen. 1921. Pp. 214. 15*s.*

MACMURRAY (JOHN V. A.). Treaties and Agreements with and concerning China, 1894–1919. Vol. I. Manchu Period, 1894–1911.

MANN (HAROLD H.) and KANITKAR, L. AG. Land and Labour in a Deccan Village. (University of Bombay Economic Series, No. III.) London: Milford. 1921. Pp. 182.

[A sequel to the study noticed in the ECONOMIC JOURNAL relating to another Deccan village. Jategaon Budruk, the subject of the present study, resembles that other village in some respects; in particular the increase in the number of holdings and the division of the holdings into fragments.]

Monetary Policy. Report of a sub-committee on Currency and the Gold Standard. London: P. S. King. 1921. Pp. 75. 2*s.* 6*d.*

MOON (PARKER THOMAS). The Labour Problem and the Social Catholic Movement in France: a study in the History of Social Politics. New York: Macmillan Co. 1921. Pp. 473.

OLDS (MARSHALL). The High Cost of Strikes. London: Pitman. Pp. xx + 286. 15*s.*

ORTON (W. H.). Labour in Transition: a survey of British Industrial History since 1914. London: Allan. 1921.

PAGAR (SHANKAR M.). The Indian Income Tax: its History, Theory and Practice. Baroda: S. M. Pagar. 1920. Pp. 219. 8*s.*

[The author, and publisher, was for some time Director of Commerce, Industry and Statistics, Baroda State.]

PAUL (E. and C.). Prolecult. (New Era Series.) A Study on Proletarian Culture. London: Parsons. Pp. 159. 4*s.* 6*d.*

PENSON (SIR HENRY). The Economics of Everyday Life. Part II. Cambridge University Press. 1921. Pp. 111.

[To be reviewed.]

PIGOU (A. C.). The Political Economy of War. London: Macmillan. 1921. Pp. 251.

[To be reviewed.]

REES (J. F.). A Short Fiscal and Financial History of England (1815–1918). London: Methuen. 1921. Pp. 246.

ROWNTREE (B. SEEBOHM). The Human Factor in Business. London: Longmans. 1921. Pp. 176.

SCOTT (JAMES BROWN). Proceedings of the Hague Peace Conferences. Vol. II. The Conference of 1907. New York: Oxford University Press. 1921. Pp. 1086.

SPALDING (WILLIAM F.). Foreign Exchange and Foreign Bills in Theory and Practice. London: Pitman. Pp. 232.

STONE (GILBERT). A History of Labour. London: Harrap. 1921. Pp. 416.

TEMPERLEY (H. W. K.), Editor. A History of the Peace Conference of Paris. Vols. IV. and V. (Institute of International Affairs). London: Frowde and Hodder. 1921.

[Economic Reconstruction in the treaties forms part of Vol. V.]

THOMAS (S. EVELYN). The Principles and Arithmetic of Foreign Exchange. London: Macdonald & Evans. 1921. Pp. 269.

WALLS (ERNEST). Progressive Partnership. (Business Man's Series.) London: Nisbet. Pp. xi + 284. 12*s.* 6*d.*

WOODS (MISS K. S.). The Rural Industries round Oxford. A survey made on behalf of the institute for research into agricultural economics. University of Oxford. Oxford: Clarendon Press. 1921. Pp. 180.

[To be reviewed.]

American.

COMMONS (J. R.). Trade Unionism and Labour Problems. Selections and Documents in Economics. Edited by W. Z. Ripley.

COMMONS (JOHN R.), and others. History of Labour in the United States. With an introductory note by Henry W. Farnam. New York: Macmillan Co. 1921. Vol. I, pp. 623; Vol. II, pp. 620.

[To be reviewed.]

MITCHELL (BROADUS). The Rise of Cotton Mills in the South (Johns Hopkins University Studies). Baltimore: Johns Hopkins Press. 1921. Pp. 281.

[To be reviewed.]

LIPPINCOTT (I.). Economic Development of the United States. New York: Appleton. 1921. Pp. 670. $ 3.50.

PASVOLSKY (LEO). The Economics of Communism. With special reference to Russia's experiment. New York: Macmillan Co. 1921.

German.

BÖHM BAWERK (EUGEN VON.) Kapital and Kapitalzins. Jena: Gustav Fischer. 1921.

[This is the 4th edition of the two well-known works of the late eminent Professor and Finance Minister. The text is left as finally revised by the author in the 3rd edition of the Theory (1909) and of the History (1914). See JOURNAL of June 1913, p. 241, and March 1916, p. 68. The book is now arranged in three uniform volumes, of which the first has the History, the second the text of the Theory, the third the Excursus, previously divided between the two volumes of text (see present Vol. II. p. xiv *note*). Professor Wieser has given us two Prefaces (to Vol. I. and Vol. II.) describing the Author's place and influence in well-chosen words of praise, though not himself wholly in agreement with the Theory.]

EUCKEN (WALTER). Die Stickstoffversorgung der Welt. Eine Volkswirtschaftliche Untersuchung. Berlin: Deutsche Verlags-Anstalt. 1921.

[A study on the supply of nitrogen before and during the War and for the future.]

STOLPER (DR. GUSTAV). Deutschösterreich als Sozial und Wirtschafts Problem. Munich: Drei Marken. 1921. Pp. 320.

Der Wirtschaftliche Wiederaufbau. Berlin: K. Block. Mk. 90. Various authors treat various sides of economic reconstruction: the socialisation of industrial concerns, direct and indirect taxes, Germany's liabilities, etc.

Italian.

AMOROSO (PROF. LUIGI). Lezioni di Economie Matematica. Bologna: Zanichelli. Pp. 472.

AMOROSO (PROF. LUIGI). Lezioni di Matematica Finanziaria, raccolte della Professóra Emma Sciolette. Volume Primo. Naples: Gennaro Mago. 1921. Pp. 208.

[The subjects treated are the operations of the money-market; the mathematical theory of capitalisation; the conceptions of functions in general, and of those which are proper to the technique of insurance; the foundations of the differential calculus and its applications to finance.

ARTOM (E.). Lineamenti della crisè sociale, cos prefazione di Achille Lorie. Turin: Unione Tipographico. Pp. 359.

PARETO (VILFREDO). Lezioni di Scienza economica razionale e sperimentale. Rovigo: Industrie grafiche. 1921. Pp. 907.

PRATO (GUISEPPE). Un Tentativo di Banco pubblico a Mantova nel 1626. Turin. 1920.

RICCI (U.). Il fallimento della politica annonaria.